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Managing Risk in System Development Contracts

Europe 1994

Business Integration Programme—Europe

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SEPTEMBER 1994

Managing Risk in System Development Contracts

Europe 1994

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Frankfurt
Sudetenstraße 9
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Germany
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London
17 Hill Street
London W1X 7FB
England
Tel. +44 (0) 71 493-9335
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New York
400 Frank W. Burr Blvd.
Teaneck, NJ 07666
U.S.A.
Tel. 1 (201) 801-0050
Fax 1 (201) 801-0441

Paris
24, avenue du Recteur Poincaré
75016 Paris
France
Tel. +33 (1) 46 47 65 65
Fax +33 (1) 46 47 69 50

San Francisco
1881 Landings Drive
Mountain View
CA 94043-0848
U.S.A.
Tel. 1 (415) 961-3300
Fax 1 (415) 961-3966

Tokyo
Saida Building, 4-6,
Kanda Sakuma-cho
Chiyoda-ku, Tokyo 101
Japan
Tel. +81 3 3864-0531
Fax +81 3 3864-4114

Washington, D.C
1953 Gallows Road
Suite 560
Vienna, VA 22182
U.S.A.
Tel. 1 (703) 847-6870
Fax 1 (703) 847-6872

Abstract

Undertaking a major IT systems development contract involves significant elements of risk to both the services vendor and to the client. This remains true despite the growing sophistication of tools and methodologies designed to assist the management of such projects.

This report examines project success factors in Europe. It looks at how users and vendors assess project risk and evaluate project failure as well as examining the risk management approaches used in IT projects. The report also reports on attitudes to vendor/client partnerships as a strategy for sharing risk in major IT projects. Project pricing strategy is also discussed from the client and the vendor perspective.

This research report identifies three vital requirements for supporting increased sales success for IT contracts whilst containing the inevitable risks at a manageable level:

- Continuing investment in *project support processes* to assist in identifying sources of risk and its management
- Stronger emphasis on a *partnership orientation* for the delivery of successful IT projects, reducing risk in long-term relationships through the creation of a common understanding of requirements
- Utilisation of *innovative pricing strategies*, to promote risk sharing and a greater involvement in the client's business goals.

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Research by
INPUT
17 Hill Street
London W1X 7FB
United Kingdom

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Introduction

A
Objectives and Scope

1. Background

Large IT systems development contracts, particularly Systems Integration (SI) projects, involve a large investment on the part of the client, frequently require the use of new technologies and demand sophisticated management processes. Consequently undertaking any significant project, whether it involves a professional services or SI vendor or is entirely conducted in-house, usually implies the assessment of a significant risk element.

IT services vendors must diligently assess, manage and contain the inherent risks involved in large projects which will stretch from the initial marketing activity through to the completion of the project commitments.

The steps to success as a systems integrator require the creation and imposition of careful marketing, opportunity qualification, disciplined bid preparation and established programme management practices. These are not one-time activities: rather, they entail constant monitoring of the systems integration plan and its execution.

Sophisticated management processes are required to accomplish the key goals of a significant IT development project which can be summarised as:

- Ensuring that the delivered functionality meets user requirements
- Meeting schedules and deadlines

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- Maintaining costs at forecasted levels
- Accomplishing the implementation of the system and its related business processes in an orderly and effective manner.

There are numerous examples of major systems developments failing to meet at least one of these criteria and many projects have failed on several of them.

A major feature of the development of the project contracting market has been the desire on the part of users to decrease their own level of risk exposure. Partnering with an external supplier who specialises in the development and implementation of complex information systems has promised the benefits of benefiting from the vendor's:

- Experience in the use of advanced technology
- Investment in the development of sophisticated tools and processes that ensure accurate and timely implementation
- Expertise in up-to-date applications relevant to their industry.

Users, though undoubtedly benefiting from these aspects of a vendor's experience should be aware that there will always remain a significant element of risk in any project however sophisticated its management and control methods are. The vendor's management experience will purely reduce and contain risk rather than eliminate it. Furthermore the sources of risk are frequently perceived differently by the vendors and the users of their services.

2. Objectives

The overall objectives of this report are to examine how the risks involved in large IT project contracting are perceived by both users and vendors of such services. Further, this report is designed to provide some understanding of the management mechanisms, contractual and otherwise, that are put in place to contain risk in IT projects.

The objective of the report can be summarised as providing market observations concerning the way IT project risks are perceived, evaluated and managed. This report also examines how these perceptions affect the nature of the contractual agreements and the

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working relationships between the users and the vendors. More fully expressed as:

- Providing insight into how both clients and vendors perceive and evaluate the areas of risk associated with IT projects and their impact on the outcome of the project
- Examining the contract mechanisms and management processes used to control risks during IT projects
- Identifying trends in risk assessment and management that are likely to have an impact on future contracting strategies and user/vendor working relationships
- Discussing the impact of risk on the pricing of projects.

3. Scope

This report provides managers and executives with an appreciation of the different views towards risks taken by users and vendors. It provides a conceptual framework to assist vendors in developing marketing approaches that improve their ability to share project risk with their clients. In particular the study:

- Provides observations on how users see the risks associated with large IT contracts
- Reports on the tools and methodologies being used by vendors to manage project risk.

The report will also be beneficial to user organisations requiring a greater understanding of the vendor's perspective towards large IT project risk and will be of use to users contemplating this type of risk sharing business transaction. In particular it will provide users with an understanding of the wide variety of approaches taken by various vendors to risk assessment and management and the impact that this has on vendor pricing.

Geographically, the report is based primarily on research conducted within Europe, although it does benefit from similar research conducted by INPUT in the United States.

The user research conducted for this report was split between business unit managers and IS managers. Where appropriate these

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groups are separately identified, together they are variously referred to as *users* and *clients* throughout the report.

B
Methodology

1. Research Approach

This report is based on field research conducted with both users and vendors during the first half of 1994. Interviews were conducted with 60 European user organisations by telephone who had experience of using a systems integration vendor in at least one project. The research was carried out in Germany, France and the United Kingdom. Vendor research was carried out largely with pan-European vendors who hold leading positions in the market. In total 10 in-depth vendor interviews were carried out. The interview guides used for this research are contained in Appendices B and C.

Business unit managers, IS (Information Systems) managers and vendor management were asked to comment on:

- Their perceptions on the sources of risk and their impact
- How they assessed risk
- Contract mechanisms and management processes used to control risk
- The impact of risk on project pricing
- Attitudes toward risk sharing and working relationships between users and vendors

In addition to the data gathered through the field interviews, information from INPUT's prior information services and systems integration research , along with data from secondary sources, was used to formulate the conclusions and observations presented in this report.

2. Demographics

This report is based on field research conducted with both users and vendors. The geographic analysis of the user sample is shown in Exhibit I-1 together with the split between IS Managers and

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Business Unit Managers. Exhibit I-2 shows the analysis of the sample by industry sector.

The vendor sample included ten of the leading fifteen systems integration vendors in Europe. In a number of cases where more than one individual per company was interviewed, in these situations one completed questionnaire was amalgamated from these interviews for the purpose of analysis.

Exhibit II-1

Geographic Distribution of User Respondents

Respondent Type	Germany	France	United Kingdom	Total Europe
IS Managers	9	9	6	24
Business Unit Managers	11	11	14	36
Total Sample	20	20	20	60

Source: INPUT

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Exhibit I-2

Distribution of User Respondents by Industry Sector

Industry Sector	Description	Number in Sample
Discrete Manufacturing	Electronics	4
	Automotive	2
	Other	7
Process Manufacturing	Chemicals and Bio-technology	4
	Food	3
	Other	6
Transportation		1
Telecommunications		1
Retail Distribution		6
Wholesale Distribution		4
Banking and Finance		10
Insurance		2
Health Services		3
Government		2
Others		5
Total		60

Source: INPUT

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C
Report Organisation

The following is a brief description of the organisation of this report:

- Chapter II is an Executive Overview providing a summary of the research findings, analysis, conclusions and recommendations of the report
- Chapter III examines IT system development project success factors, how respondents assess project risk and evaluate project failure
- Chapter IV discusses risk management approaches in IT development projects
- Chapter V evaluates the development of vendor/client partnerships as a strategy for sharing risk in large development projects
- Chapter VI looks at vendor pricing strategies for risk reduction
- Appendix A contains a definition of terms used in the report
- Appendices B and C provide the user and vendor interview guides used for the field research for this study.

D
Related Reports

Contractual Approaches to Project Risk Reduction - U.S. Business Integration Program (June)

Procurement Approaches to Systems Integration - Systems Integration Programme - Europe (July 1993)

Methods for Successful Systems Integration - Europe 1992 - 1997 - Systems Integration Programme - Europe (September 1992)

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II

Executive Overview

A
Business Process and Application Focus Key to Project Risk Containment

Over the past ten years, companies have increasingly used professional services and systems integration firms to assist them in major systems development projects. However, despite the growing sophistication of tools and methodologies, undertaking a major systems integration effort still involves significant elements of risk to both parties.

Reviews of failed projects invariably concentrate on technical problems rather than on inadequate management and the failure to understand the business needs. There exists within the IT industry an erroneous belief that uncertainty, and consequently risk, can be managed out of a project. All projects have inherent risks which need to be recognised and their impact minimised. Uncertainty needs to be explicitly recognised and managed within a project.

System development vendors need to become more involved in the business processes and applications that drive projects. INPUT's latest report on this area identifies three vital requirements to support the drive towards greater business involvement whilst containing risks at a manageable level (reference Exhibit II-1):

- Vendors need to continue to invest heavily in *project support processes* that identify sources of risk, measure its impact on costs and manage or contain the inherent project risks. These processes frequently incorporate off-the-shelf technologies or standard offerings such as widely available CASE tools.

- Vendors need to consider the development of a stronger *partnership orientation* to the delivery of IT projects. Vendors

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would rather have a long-term relationship with what they consider to be quality customers. Risk is reduced in long term relationships through the creation of a common understanding of business requirements. These long term relationships may evolve over time into outsourcing contracts for applications management and business operations where a higher level of risk is shared within the framework of a service level agreement.

- Vendors need to consider *innovative pricing strategies* for system development contracting. From a vendor's perspective fixed-price contracts represent the highest level of risk whilst time and materials contracts represent the least risk exposure. To strike a balance between these positions, vendors should consider developing more innovative pricing strategies to promote risk sharing and reduce profit erosion. Involvement in the client's business processes and applications will be a necessary element of this approach.

Exhibit II-1

Managing Risk in System Development Contracts

- Risk Management Processes Focus on Business Objectives
- True Partnerships Require Business Involvement
- Innovative Pricing Strategies Relate to Business Requirements

B

Risk Management Processes Focus on Meeting Business Objectives

System development vendors have developed a number of management processes to assess, contain and control the inherent risks in projects. Increasingly the focus of these processes needs to be related to the business and management related aspects of the projects rather than the purely technical and development concerns. Ultimately system development projects are driven by the client's need for the business related benefits of the project.

To place project risk management into its proper context it is necessary to:

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- Assess the extent to which systems integration projects actually fail
- Examine the risk factors that need to be considered
- Describe the risk management processes currently in place.

1. Project Failure Rates

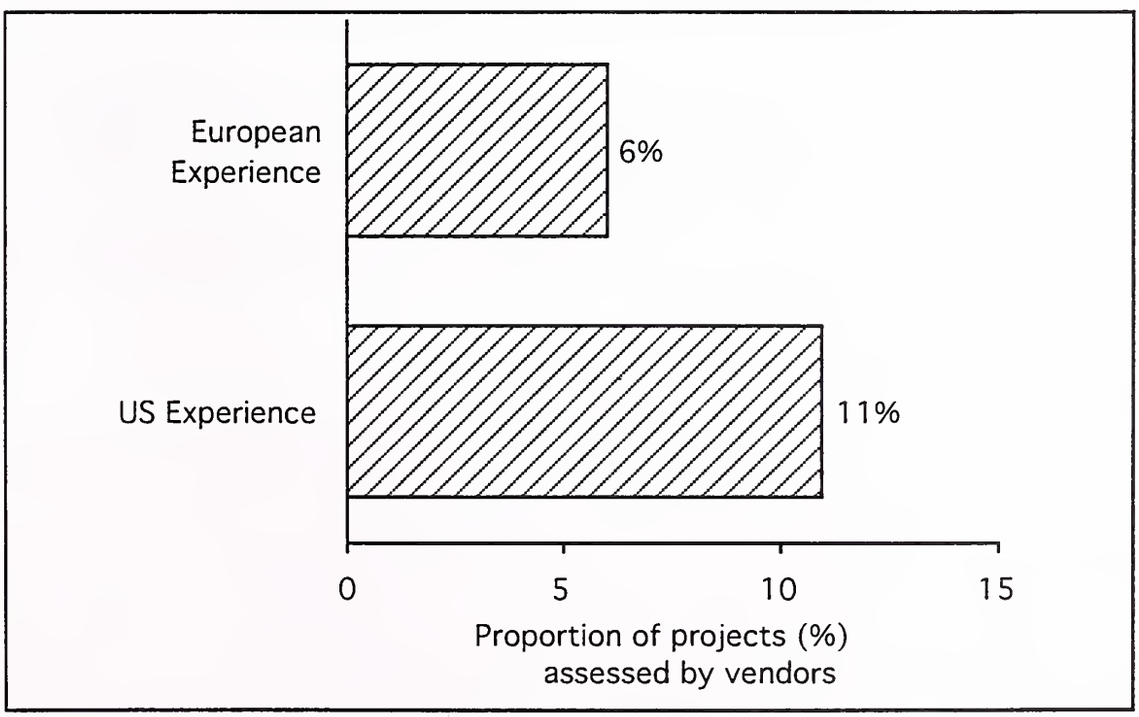
Vendor respondents for this survey, representing a significant proportion of the overall European market, were prepared to reveal a frank perspective on the degree to which projects failed.

Project failure from the user's perspective relates ultimately to a failure to meet the business objectives set for the project. However, typically vendors claim that they will undertake whatever actions are necessary to satisfy meeting client objectives even if that results in the absorption of a significant loss on the project.

Despite this claim, vendor's estimate of the proportion of projects that failed to meet the required business need ranged up to 20%, but averaged 6% of all projects, as can be seen in Exhibit II-2. (The exhibit shows that US experience indicates a significantly higher proportion of project failure.)

Exhibit II-2

Failure to Meet Client's Business Needs



Source: INPUT

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However, assessing the failure to meet the project's objectives is a subjective measure and clients themselves might well report a higher percentage of failures were it possible to measure it. The ultimate objective measure is where the project is completely abandoned. The incidence, however, of complete project abandonment is very low with only a limited number of projects, for example the London Stock Exchange Taurus system, falling into this category.

Given a determination on the part of the vendor to do whatever is necessary to achieve the client's business objectives, project failure can be viewed as:

- A failure to complete the project on time (and its knock-on economic impact) from the perspective of the client
- A failure to generate the planned level of project profitability from the perspective of the vendor.

In respect of time slippage vendors admitted that probably 50% of all projects overran the planned time scale to some extent. The assessment indicated that most of these do not overrun to any great degree, but that a minority (of the order of 5%) are the real problem.

The vendor's perspective on project profitability is indicated by the comments listed in Exhibit II-3. Thus although the average, for the leading vendors interviewed in this survey, was 6% of all projects, some vendors indicated much higher rates when value of projects rather than the number of projects was used as the basis of the calculation.

Exhibit II-3

Proportion of Unprofitable Projects — Vendor Comments

- " 10% by volume and 40% by value "
- " Around 1 in 20 where we have lost money "
- " All the projects completed to date have made a positive contribution"

Source: INPUT

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2. Assessment of Risk Factors

An assessment of both the vendor's and the client's views of project risk factors indicates that it is management and business factors rather than technical factors that are most likely to cause projects to fail. This is shown by the list of main risk factors that emerged from the research, as shown in Exhibits II-4 and II-5.

Exhibit II-4

Project Risk Factors — Vendor Perspective

- Initial requirements inadequately identified
- Poor project management by vendor
- Inadequate risk evaluation at start of project
- Lack of user involvement

Source: INPUT

Exhibit II-5

Project Risk Factors — User Perspective

- Poor project management within client organisation
- Poor project management by vendor
- Inaccurate estimation by vendor

Source: INPUT

Users perceive that both their own personnel and those of the vendor contribute towards project risk through poor project management. Inaccurate estimation of the real resources required for project completion was also strongly represented as a major cause, and therefore, risk factor, particularly from the business manager group of respondents.

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From the vendor's standpoint the failure to define initial requirements adequately was the most highly rated project risk factor. This is associated with a failure to evaluate risks effectively at the start of the project.

Other factors highly rated by vendors as a cause of risk and possible subsequent project failure included their own project management capability and the lack of user involvement during the course of the project.

The lesson to be drawn from this is that vendors need to spend much more time becoming involved in the specification of the project prior to its commencement. This implies much more involvement on the part of vendors in the business processes and applications that the project supports. Vendors would be able to make a much more realistic assessment of the business and environmental risks that surround the planned project through such an approach .

Greater awareness of the project's business aims and objectives would enable the development of more realistic project scenarios which would describe the possible consequences of things going wrong.

Insufficient focus on business problems during the running of the project also contributes to increased risk of failure. Vendors indicated that an analysis of project development problems has produced statistics such as:

- Nearly 50% of project manager time spent on user interface problems which only account for 15% of the problems
- No measurable time spent on associated business processes which generate 70% of the problem.

3. Risk Management Processes

The importance of a project's goals and the business process and application factors required to achieve project success, are driving increasing client involvement in the management processes used for project implementation. Three areas of risk management can be identified:

- Risk assessment

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- Risk avoidance (or containment)
- Risk control

Vendors use a variety of **risk assessment** tools and processes of which formal risk scoring using questionnaires appears to be the most frequently used method. Limited use was indicated of software based tools and techniques such as *influence diagrams* and *process maturity* models.

A *process maturity* model, in particular, allows for an evaluation of the project management skills available as well as such factors as the business infrastructure. This approach recognises the importance of the business and management factors rather than the technical factors in assessing project risk.

One important aspect of **risk avoidance** is to no-bid on the contract. The average no-bid rate for the vendors questioned was 5% with a range given of zero to 25%. The reporting of zero no bidding may be accounted for by the practice of some vendors going to preliminary proposal stage on virtually any project but then subsequently withdrawing from bidding only as the risk become more clearly delineated.

Some other risk avoidance strategies that vendors can utilise to contain risks in the development process include:

- Joint ventures for leading-edge project work in order to formalise the concept of risk sharing and promote user involvement in the design process
- Encouraging a contractual commitment to user involvement in the project to increase the sense of partnership in its development and help ensure that adequate user resources are made available to meet contract commitments
- Inclusion of user personnel in vendor-managed processes, at the earliest stage possible, to promote direct participation and more direct feedback concerning the business objectives and business environment factors within which the project must operate.

Once project risks have been assessed and accepted then the vendor's focus must turn to **risk control**. To do this widespread use is made of more standard off-the-shelf project management software packages. Additionally a number of vendors placed

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particular emphasis on the use of quality management systems in this context.

However, it needs to be recognised that it is the quality and experience of the individuals concerned in the project that remains the key factor in controlling on-going project risks. The quality of project management is of course paramount.

There is also the need to involve the business user side in all aspects of the project through a policy of open communications. Formal agreements for project changes were also viewed as an important risk control factor.

The management of sub-contractors is likely to become an increasingly important risk control factor in the future as SI firms seek to access specialist service or technical skills. This will place additional emphasis on planning, control and reporting mechanisms in relation to subcontracting. A lot of management energy will need to be invested in this task to control the inevitable risks associated with sub-contracting.

C
Partnership Approach Encourages Business Involvement

The partnership business relationship model has been frequently promoted by vendors of project contracting services as an approach to support improved delivery of systems. However its true meaning has been devalued by overuse and its inappropriate application. Consequently while it is a commonplace for vendors to talk about developing partnerships with their clients, in practice few true partnership relationships exist and users remain sceptical about vendors true motivations and objectives.

A partnership implies the sharing of mutually agreed and accepted goals, the common commitment of resources to achieve those goals and a sharing of the inherent risks leading to shared profit or loss resulting from the goals.

The essential issue that vendors need to address is that their perspective on partnership conflicts with that of their clients:

- From the vendor's standpoint, the idea of a partnership seems to hold out the promise of sharing risk and thus the logical consequence of reducing the risk to themselves

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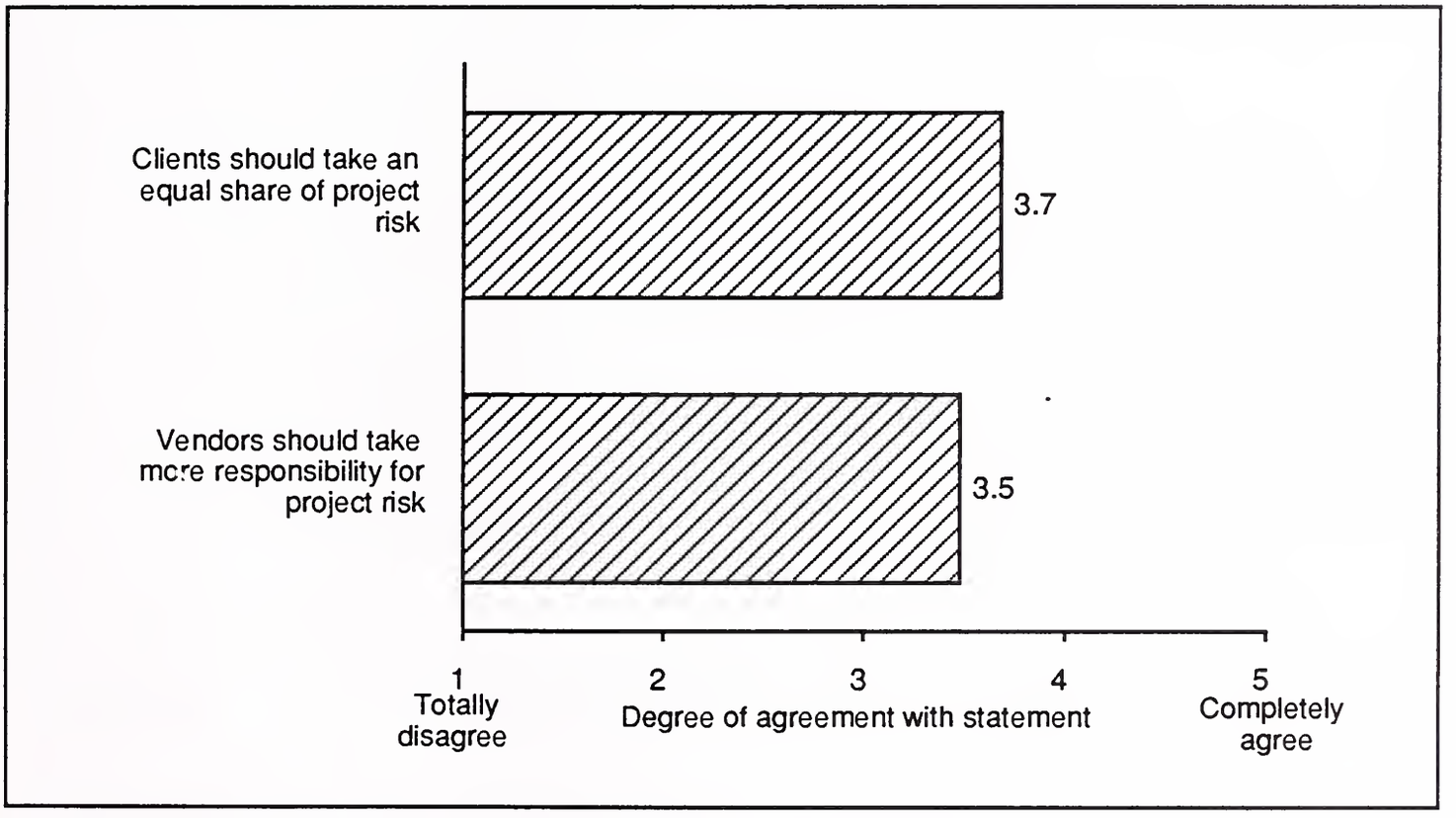
- From the user's perspective vendors are in many cases insufficiently committed to the overall business objectives and business environment issues relating to project development. Consequently users would like to see vendors bear more responsibility and risk for projects.

Exhibit II-6 indicates user attitudes to project risk. The survey data provides some support for the view that users currently perceive themselves as bearing the bulk of the project risk even though they are, in many cases, contracting with vendors on a fixed price basis.

Exhibit II-6

User Perspective on Project Risk



Sample of 60 European users.

Source: INPUT

From this it follows that users would like to see greater vendor involvement in the project which they can only do by becoming committed to business activities that surround it.

However, vendors face a further difficulty in becoming more involved with the project's business objectives, and that is to persuade clients of their capabilities and competence to participate in these additional business related areas.

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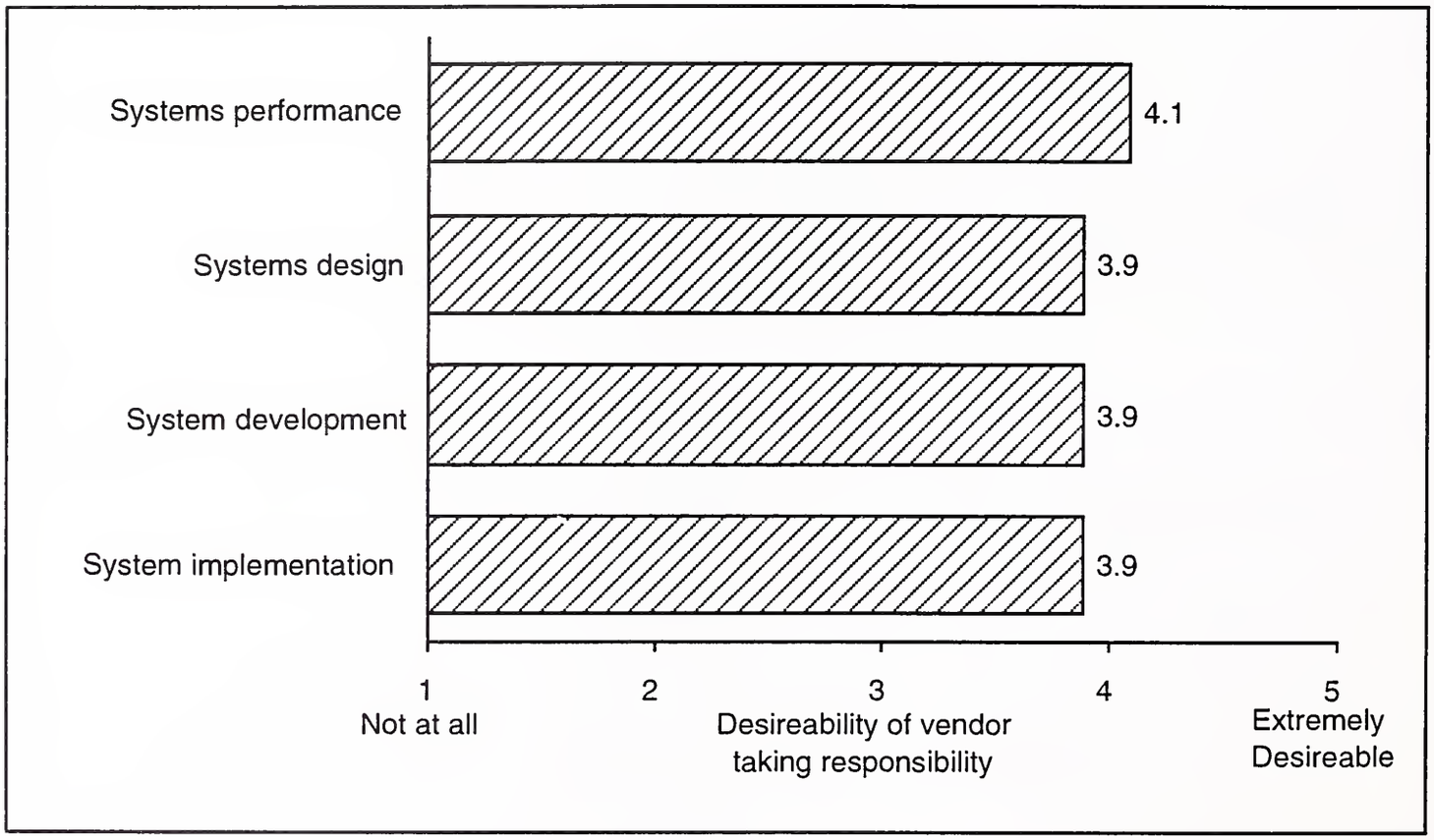
Exhibit II-7 shows an indication of user emphasis on project aspects they want vendors to concentrate on. Little overall emphasis was placed on vendors taking responsibility for the business related aspects such as business process design and functional specifications. It should be recognised, however, that there are a minority of users who do recognise the need for these business services. Generally IT services vendors are viewed as being competent only in strictly IT related areas.

Exhibit II-7

User Perspective on Vendor Responsibility



Sample of 60 European users. *Source: INPUT*

Thus the current market situation is characterised by a user perspective that:

- Remains committed to the individual tendering of projects for specific IT objectives
- Recognises that closer co-operation between user and vendor is desirable, see Exhibit II-8, but that longer term partnership benefits can only be derived from greater involvement in the non-IT aspects of the endeavour

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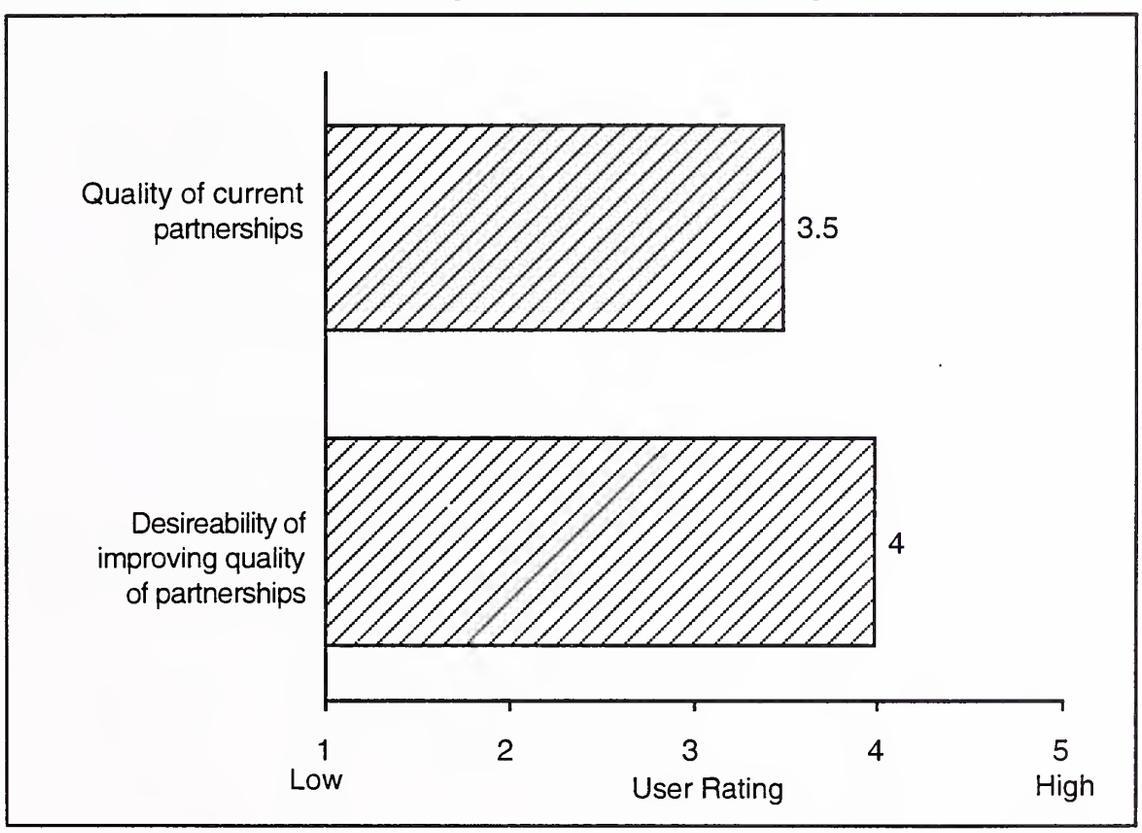
- Views most vendors as being competent only in IT activities.

Vendors express the desire to develop partnership relationships in the expectation of:

- Reducing risk through the development of a common understanding of the project's business objectives
- Reducing marketing costs through the development of long-term customer relationships.

Exhibit II-8

User Perspective on Partnerships



Sample of 60 European users . *Source: INPUT*

In order to achieve these objectives many vendors are going to need to fundamentally re-assess their market approach. Should they remain providers of focused IT related services or should they extend their capabilities into the related business aspects of the projects they bid for. Only through facing up to this challenge are they likely to gain the necessary credibility to succeed in truly forming partnerships with their clients.

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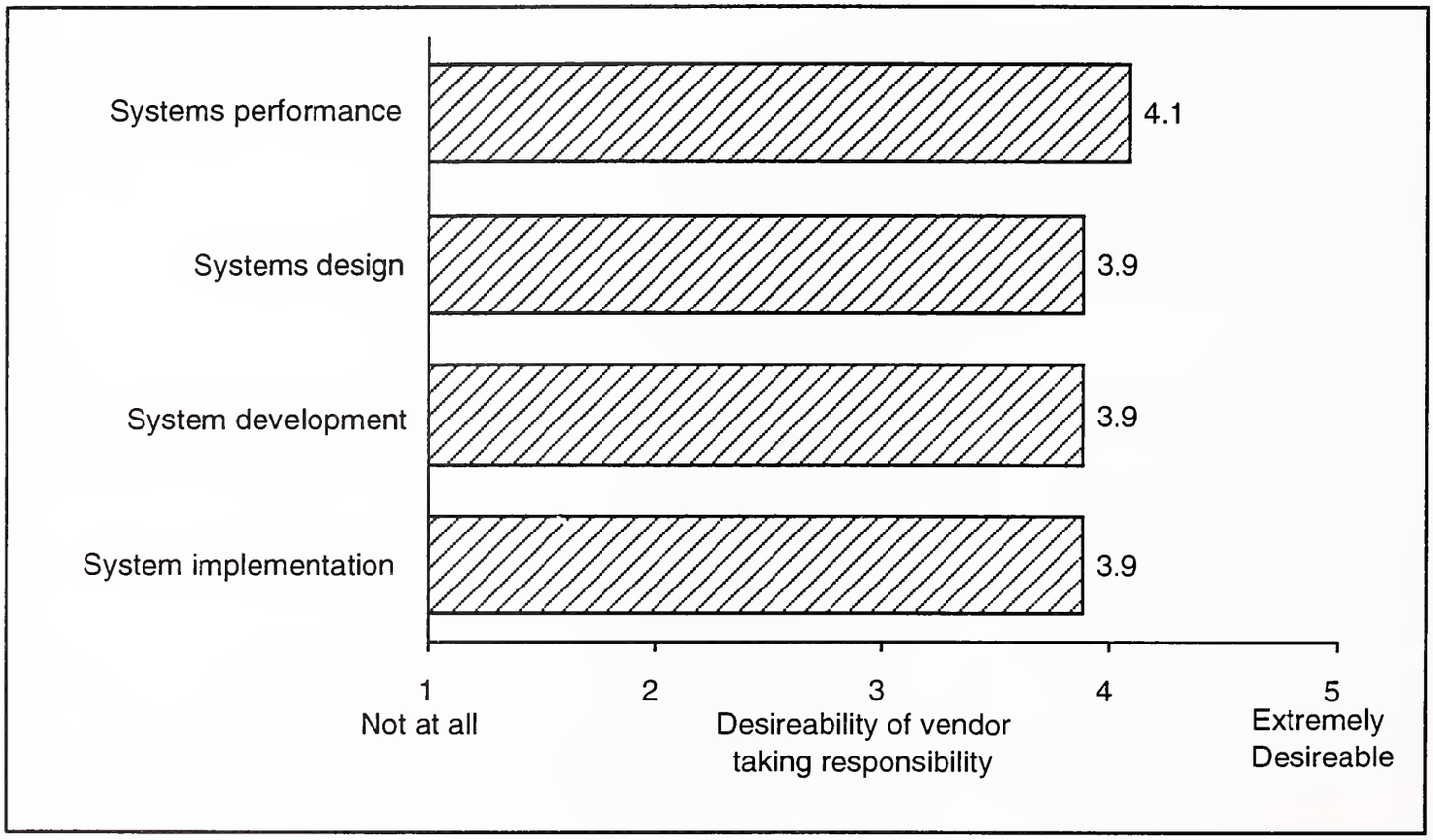

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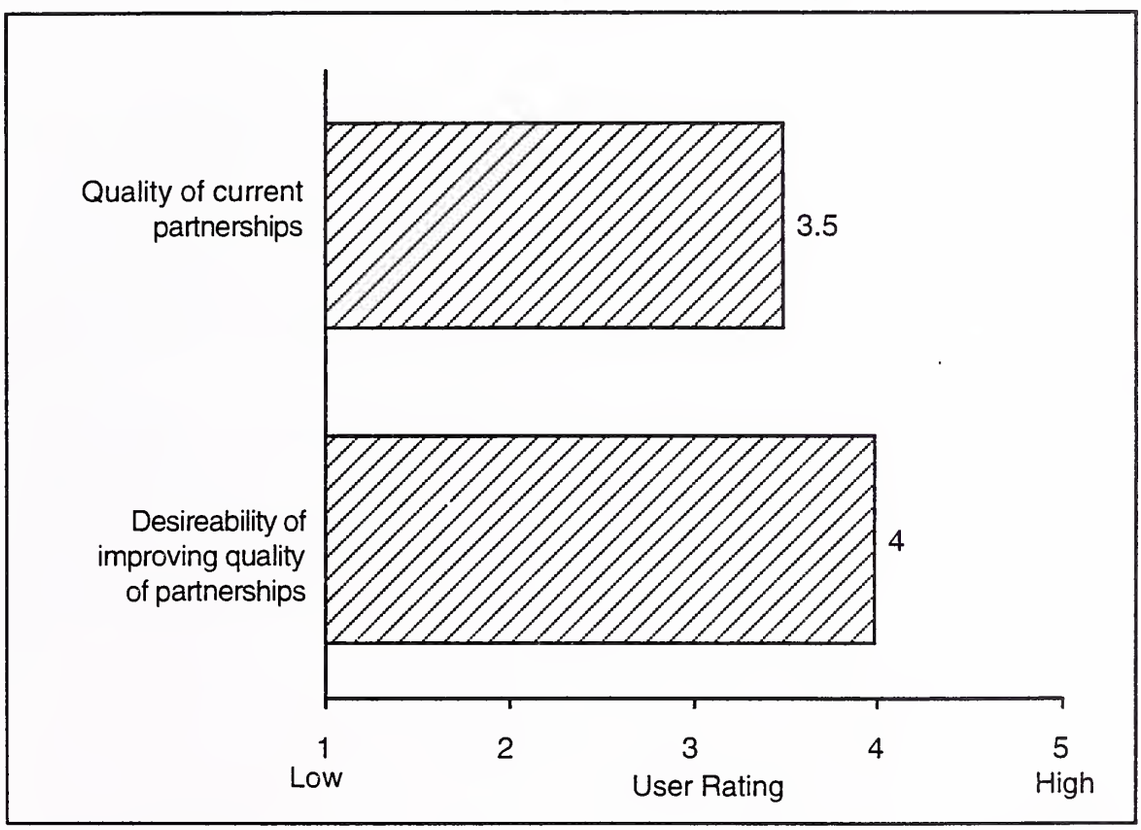

Sample of 60 European users . *Source: INPUT*

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D

Innovative Pricing Approaches Relate to Business Requirements

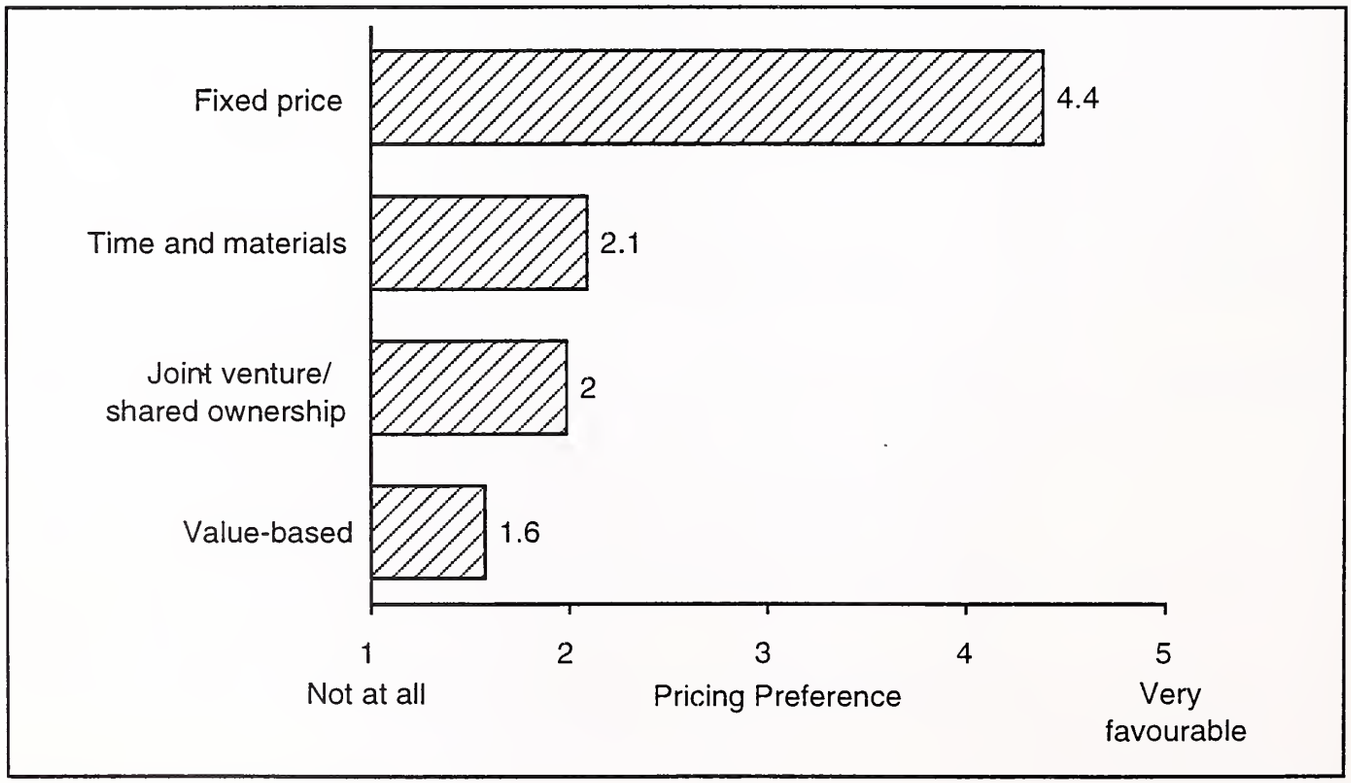
The use of fixed price contracts dominates the project contracting market, particularly for large systems integration projects. However, the fixed price approach assumes that the user can specify a precise solution to the business needs that drive the project requirement at a very early stage in its development. This proves all too frequently to be an unrealistic assumption.

Thus the real underlying issue that needs to be addressed is the difficulty of understanding and responding to the real business needs of the organisation that is contracting the project.

Possible pricing approaches that address this central issue are joint-venture and value-based pricing strategies. Exhibit II-9 indicates user preference for these approaches in comparison to fixed price and time and materials pricing. Clearly there is little current appeal for users in anything other than the fixed price method. However, vendors that succeed in developing new pricing processes are going to gain a significant competitive advantage.

Exhibit II-9

User Preference for Project Pricing Method



Sample of 60 European users. *Source: INPUT*

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The main advantages of fixed pricing are well known, it delivers the benefits of predictable costs and accurate budgeting together with ease of competitive comparison and internal management approval. However, it does have significant disadvantages. From the user perspective, as already referred to above, it raises the possibility of disputes over changes in the specification and the deleterious impact on the vendor in cost overrun situations. Additionally, an over-emphasis on competitive price comparisons may dominate the vendor selection process to the detriment of other important factors.

In contrast value based pricing is thought to be a good idea in theory but one that has a number of practical disadvantages. Value-based pricing can be defined as the linking of project price to the achievement of specific business goals. This has the benefit of focusing attention on the real objectives and can encourage an environment in which both parties are incented to work for the success of the project. This would appear to offer significant benefits in an environment where projects appear to have inadequate links to business goals, for example up to one third of projects are claimed to not satisfy the client's business needs.

However users perceive that value-based pricing is difficult to manage and prone to disputes, although this may largely reflect limited experience and exposure to this pricing method. IS managers in particular perceive that difficulties would arise in apportioning benefits between the IT project itself and other factors and that it would complicate negotiations with senior managers in getting approval for the project. These views underline the paradigm shift required in the thinking of users, particularly of IS managers, in order to relate projects to the business drivers and to involve third party organisations in effective processes that achieve common goals.

Clearly there is some synergy between the pricing approaches adopted and the partnership approach discussed in section C above. Since the central issue to be addressed in so many projects is one of relating the IT elements to achieve real business benefits, then pricing solutions that support this direction will ultimately prevail. Currently little experience and exposure to these new methods exist. Vendors that overcome the resistance in the market to these changes are likely to profit considerably from improved profitability as a result of reduced risk.

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III

SI Project Success Factors

A
Risk Factors in SI Projects

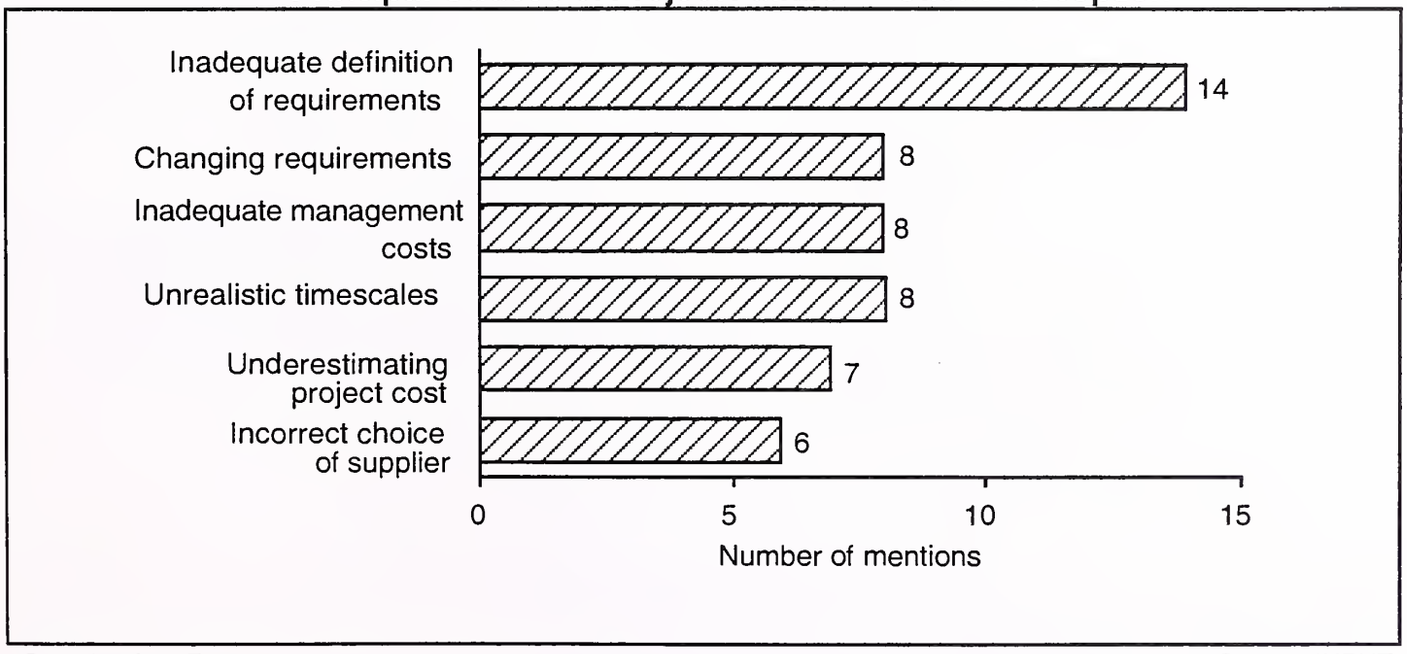
1. Client Evaluation of the Causes of Project Failure

The principal causes of project failure can be largely attributed, according to clients, to management rather than technical factors. The most important factor considered to be at the root of failed projects is inadequate definition of requirements.

When clients were asked, un-prompted, to identify the principal causes of project failure, they cited *inadequate definition of requirements* as the most likely reason. The analysis of the responses is shown in Exhibit III-1.

Exhibit III-1

Principal Causes of Project Failure — Client Perception



Sample of 60 European users. *Source: INPUT*

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Other prominent factors cited by users include changing requirements, the adoption of unrealistic time scales and the acceptance of optimistic cost estimates. Users perceive that both they and the vendors contribute towards these failings. The adoption of unrealistic time scales is principally seen to be caused by their imposition by client management, though some clients perceived that vendors sometimes overestimated their capability to meet the desired time scale. Underfunding, a failure to commit sufficient financial resources to a project, by user management was also mentioned by some clients as a contributory factor to poor cost estimating.

There are some differences in the frequency with which IS managers and business unit managers mentioned these various risk factors and these differences are shown in Exhibit III-2. The data points to three possible significant differences in viewpoint between these two groups of respondents:

- Business unit managers seem more likely than IS managers to cite a failure to adequately define requirements as the most important factor
- IS managers, perhaps not surprisingly, seem more likely than business unit managers to view the allocated budget as inadequate
- Business unit managers seem more dissatisfied with the choice of vendor when failure occurs than IS managers.

Exhibit III-2

Comparison of IS and Business Unit Manager's Perceptions
Principal Causes of Project Failure

	Proportion of Sample (%)	
	Business Unit Manager	IS Managers
Inadequate definition of requirements	25	21
Changing requirements	11	17
Inadequate management control	8	21
Unrealistic time scales	14	13
Underestimating project cost	6	21
Incorrect choice of supplier	11	8

Sample of 36 European business unit managers and 24 IS managers. *Source: INPUT*

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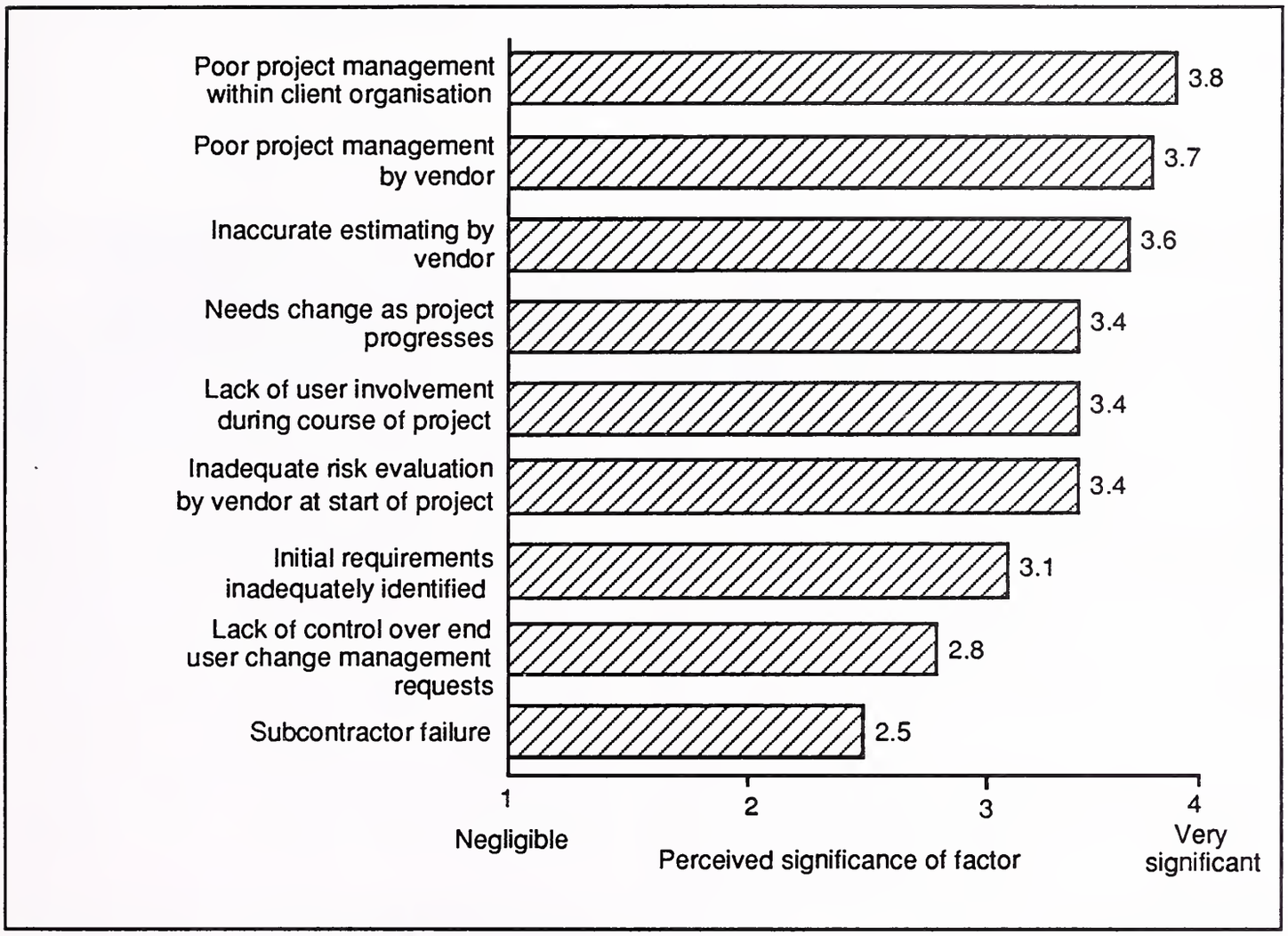
The user respondents were also asked, against a prompted list, to rate the significance of each of a number of potential sources of project risk. The most highly rated factors are listed in Exhibit III-3.

Exhibit III-3

Significance of Risk Factors — Client Perception



Sample of 60 users. standard error = 0.1 *Source: INPUT*

Inadequate project management and inaccurate estimating are viewed as the most significant risk factors. However, whilst users perceive project estimating to be the responsibility of the vendor, they also perceive that their own organisation's project management capability comprises an approximately equal threat to project success. It is well known amongst vendors that the client's inability to manage the vendor is a considerable threat to project success. Clearly, users also recognise this factor.

Exhibit III-4 takes the results shown in Exhibit III-3 and analyses the differences in the perception's of business unit managers and

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IS managers. It can be seen that there are no significant differences between the two groups except for the issue of *inaccurate estimating by the vendor*. IS managers, having had experience in estimating and managing IT projects, would be well aware of the difficulties and potential pitfalls and consequently could be expected to take a more sympathetic, or more realistic, view of the problems faced by vendors in this area.

Exhibit III-4

Differences between Business Manager and IS Manager Perception —Significance of Risk Factors

Risk Factor	Overall User Sample	Business Managers	IS Managers
Poor project management within client organisation	3.8	3.8	3.9
Poor project management by vendor	3.7	3.7	3.6
Inaccurate estimating by vendor	3.6	3.8	3.3
Needs change as project progresses	3.4	3.3	3.5
Lack of user involvement during course of project	3.4	3.4	3.5
Inadequate risk evaluation by vendor at start of project	3.4	3.5	3.2
Initial requirements inadequately identified by users	3.1	3.0	3.2
Lack of control over user change management requests	2.8	2.7	2.9
Subcontractor failure	2.5	2.5	2.4

Sample of 36 European business units managers and 24 IS managers. *Source: INPUT*

Exhibit III-5 provides the sample analysis for the same question by country group. In this analysis there do exist a number of significant differences in user perception on sources of project risk between the country groups. The principal differences that emerge are:

- Poor project management, whether within the client organisation or on the part of the vendor, is considered to be a far stronger factor in both France and Germany than in the UK

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- In contrast the U.K. sample indicates that the highest risk factor is considered to be inaccurate estimation on the part of the vendor - clearly there exists most confidence in the vendor's ability to estimate accurately in Germany
- However, German users rate lack of their involvement during the course of the project far higher than in the other two countries, as a source of project risk
- An inability to prepare adequately at the start of projects, whether by vendors or by users, stands out much more strongly as a project risk factor in the U.K. than in the other two country markets surveyed.

Exhibit III-5

Country Differences - Users Perception of Project Risk Factors

Risk Factor	Overall User Sample	France	Germany	U.K.
Poor project management within client organisation	3.8	4.3	4.0	3.3
Poor project management by vendor	3.7	3.8	3.8	3.4
Inaccurate estimating by vendor	3.6	3.7	3.2	4.0
Needs change as project progresses	3.4	3.1	3.5	3.6
Lack of users involvement during course of project	3.4	3.3	3.9	3.2
Inadequate risk evaluation by vendor at start of project	3.4	3.1	3.4	3.7
Initial requirements inadequately identified by users	3.1	2.7	3.0	3.7
Lack of control over end users change management requests	2.8	2.6	2.4	3.4
Subcontractor failure	2.5	2.0	2.2	3.2

Sample of 36 European business units managers and 24 IS managers. *Source: INPUT*

2. Vendor Assessment of Project Risk and Failure

Managing risk effectively on a project by project basis is an essential part of the professional SI vendor's business. Failure to manage project risk effectively can lead to:

- Cost overruns impacting the bottom line profitability of the project
- Damage to a vendor's reputation causing a potential negative impact on future revenue streams.

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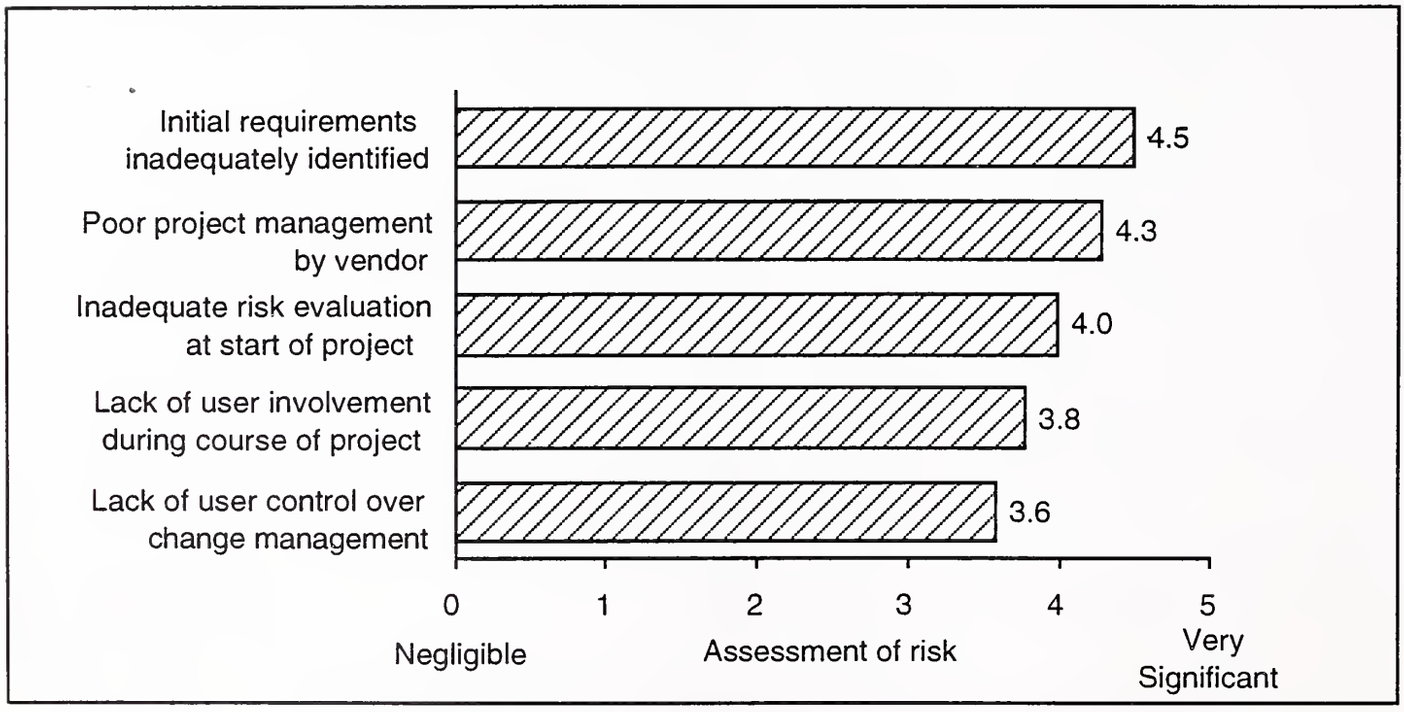
The factors most likely to contribute to project failure, according to vendors, are:

- Where user expectations are not met, the problem is generally considered to originate in a failure to identify requirements and poor project management by the vendor during the early phases of the project
- Where the project has been unprofitable it is largely because the vendor has underestimated the risks involved at the start of the project.

The principal sources of project risk identified by vendor's are rated in Exhibit III-6. Factors considered by vendors to be of low risk are shown in Exhibit III-7.

Exhibit III-6

Sources of Project Risk — Vendor Assessment of High Risk Factors



Sample of ten leading European vendors, standard error = 0.3. *Source: INPUT*

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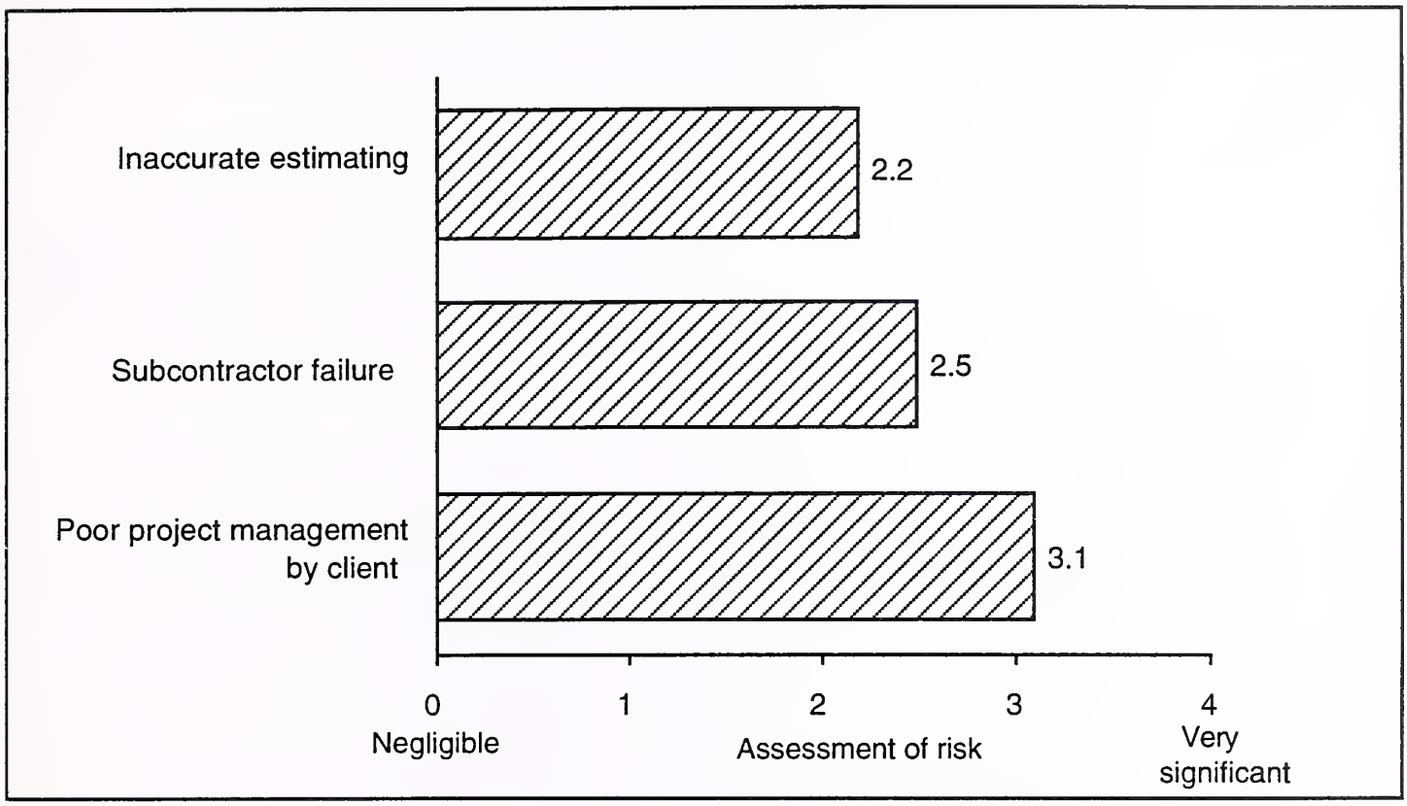
Exhibit III-7

Sources of Project Risk — Vendor Assessment of Low Risk Factors



Sample of ten leading European vendors, standard error = 0.3. *Source: INPUT*

The tendency reported by the vendors interviewed is for systems integrators to identify the technical risks but not to make a realistic assessment of the business and environmental risks that surround the project. Analysis of project development problems has indicated statistics such as:

- Nearly 50% of project managers time is spent on user interface problems which are responsible for only 15% of problems
- No measurable time is devoted to associated business processes which generate 70% of problems.

Many of the vendor respondents questioned the extent to which any vendor really developed project scenarios which described the consequences of things going wrong. One vendor commented, "we do not listen to the messages we have heard".

Measuring the degree to which SI projects actually fail is a difficult task, especially from a survey, where respondents may wish to minimise difficulties and present as positive a position as possible to the outside world. In fact, the leading SI vendors that

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participated in this survey, and who account for a substantial part of the SI market in Europe, were prepared to reveal a frank perspective on the degree to which major projects did not meet the initial criteria set for them. However, one of the obvious difficulties encountered here is determining the criteria by which project failure can be judged.

One definition of failure widely perceived in the market is the ultimate abandonment of the project, or at least from the vendor's perspective that the system is never delivered or the project is not completed. If this is taken as the criteria then clearly there are very few absolute failures.

The London Stock Exchange Taurus project would be an example of total abandonment of a very large project. This example supports the argument that failures are more often due to an inability to establish the overriding business goals effectively rather than one in which the project fails for technical or project management reasons. Another example of this type of project is the European Union customs administration where an almost total failure to agree on management objectives was entirely responsible for the project delays and associated problems.

The London Ambulance Control system was an example of a project where the installed system, once it had gone live, totally failed to perform at the required functional level. The project was immediately suspended amidst much publicity.

In these cases vendors take a view that they must achieve client satisfaction at all costs. Consequently, despite the negative impact on the bottom line, they continue to invest in projects to achieve a result to protect their name and image and to attempt to ensure the possibility of on-going revenue streams from that same client.

In doing this they are of course impacting their short term planned profitability significantly. For example one vendor was quoted as saying "we do not have projects which do not meet the client's need", implying that whatever actions necessary, at whatever cost, would be taken to satisfy the client.

Further insight on the business versus technical aspects of large projects was provided by a vendor who commented “we have a number of technical successes and business failures in the same project, we gave the customer a ray gun when they needed

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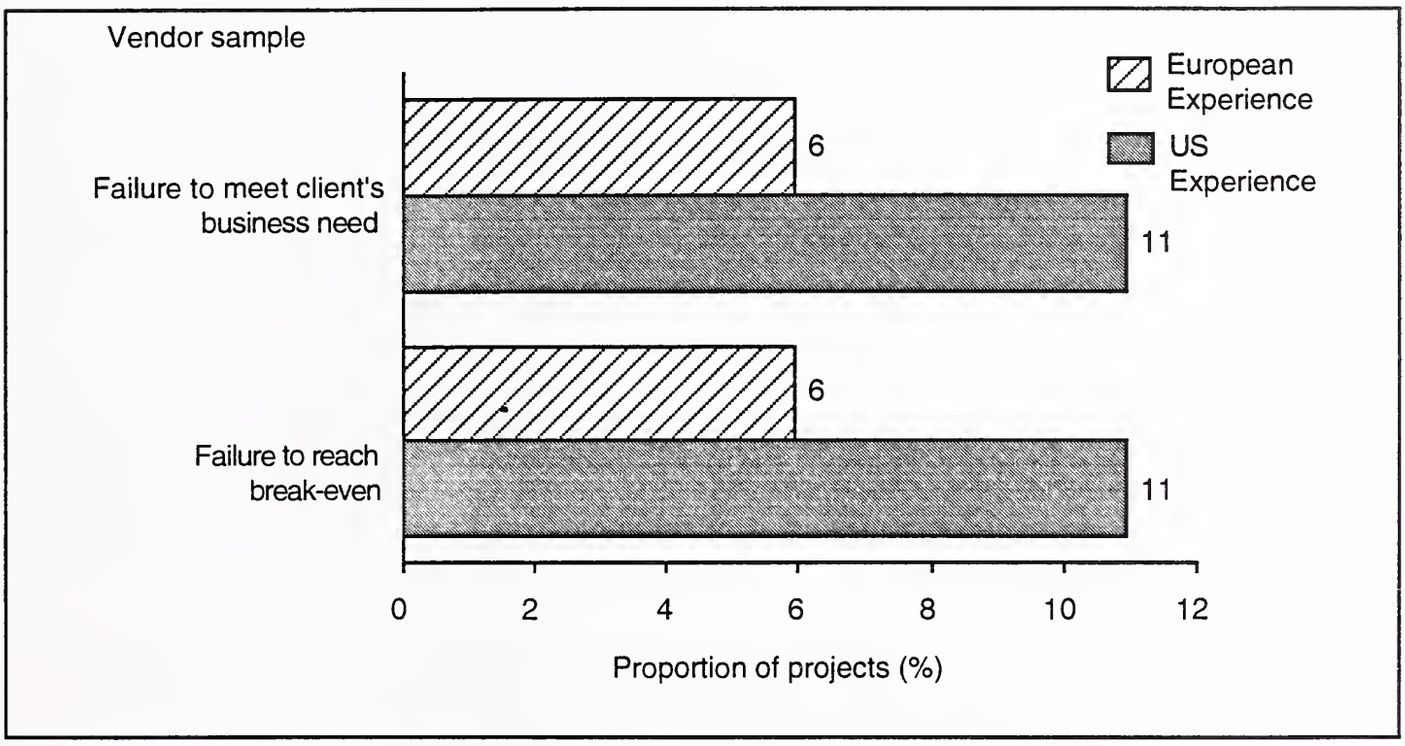
a pea shooter". The respondent estimated that as many as one third of all projects fell into this category.

In the vendor survey, respondents were asked to distinguish between the proportion of projects that failed to meet the client's business needs or resulted in financial loss to the vendor. The proportions as estimated by the vendor sample are as shown in Exhibit III-8.

Exhibit III-8

Project Failure Rates — Vendor Perspective



Sample of eight leading European vendors. *Source: INPUT*

For comparative purposes this exhibit also includes the results obtained from a similar survey of vendor opinion conducted in the Unites States. In the US, vendors admit to a significantly higher proportion of project failures whether judged on business objectives or on profitability. However, it should be born in mind that the assessment of what failure actually means varied considerably between different respondents to the survey.

Exhibit III-8 shows clearly that the incidence of these two types of failure appears to be equally divided. In both cases users will tend to place the source of the problems on the vendor, and generally vendors agree with this diagnosis.

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Given the attitude of achieving project aims at all costs, failure from the client's perspective will largely concern time scale slippage (and its knock-on economic impacts), and from the vendor's perspective will largely concern profitability.

Most vendors are realistic in admitting that about half of all projects overrun the planned time scale to some extent. However, they point out that most do not overrun by very much. It is the minority that overrun significantly, hence the low percentage (6%) indicated in Exhibit III-8, that are the real problem. Significant delay was assessed as being over one year in duration. Large projects which incur serious time delays are largely accounted for by the pioneering type of project where the rules have to be invented as the project is developed.

Vendors signalled their objective of continuously reducing the incidence of significant overruns. One vendor cited an internal initiative to further define the causes of failure and to devise programmes of awareness and training for their project managers in order to be better able to cope with projects. Additionally this particular vendor indicated that they were also looking to adopt policies that would help change the behaviour of the client's management so that they might be in a better position to understand what could or could not be done over any particular time scale.

Exhibit III-9 represents the range of vendor comments regarding project profitability. These indicate some disturbing findings in relation to the overall profitability of SI type business with indications of widespread failure to meet profit targets. One vendor admitted that it had on a number of occasions placed surplus people on projects in order to keep them occupied; the inclusion of this type of project doubled their percentage of unprofitable projects from 2% to 4%.

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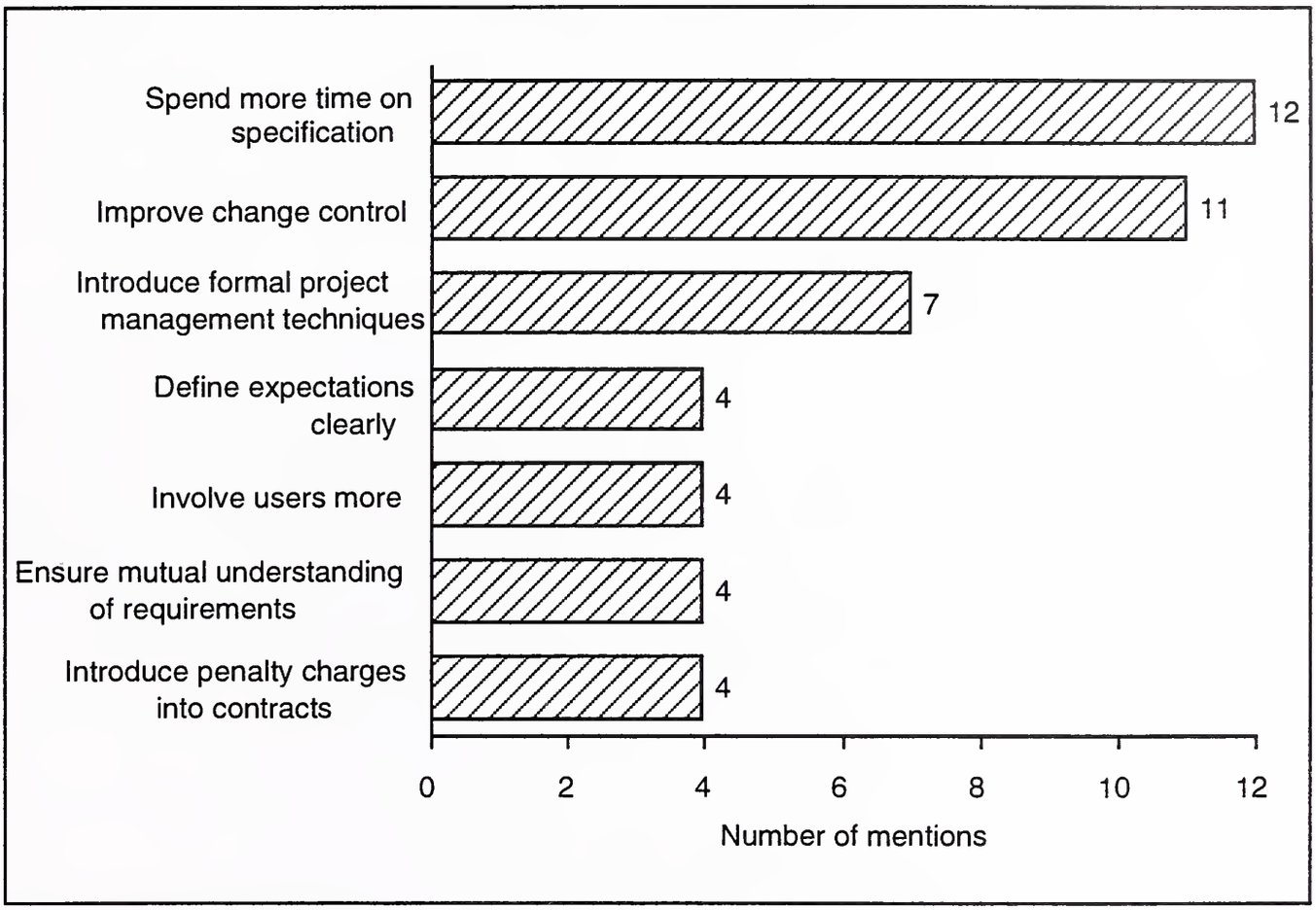
Exhibit III-9

Minimizing Chances of Project Failure, User Perspective



Sample of 60 European users *Source: INPUT*

Another approach to the assessment of project success and failure used by some vendors was the employment of customer satisfaction surveys. One vendor suggested that they felt satisfied with their performance on projects because over 80% of their clients rated them as *good* to *excellent* in terms of their ability to handle problems that occurred. This comment supports an environment in which problems are recognised to be the normality of running projects, success is simply measured by the vendor's ability to handle these problems.

Another vendor commented that projects might more often fail because the required level of satisfaction had been misunderstood. This vendor commented that it was necessary to focus on particular market sectors, e.g. defence, public sector, energy, as the only way to develop a better understanding of the client's real

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needs and thus their required levels of satisfaction for different elements of the project.

B
Managing Risk - the User Perspective

User respondents were also asked what steps should be taken to minimise the likelihood of project failure. As shown in Exhibit III-9, their answers to this question tended to focus on improving the quality of the initial specification and on improving change control procedures.

Users recognise the importance of spending more time on the specification, but come under considerable pressure to get projects underway in short time scales. Only a minority of users recognise that vendors should spend more time becoming involved in the specification prior to the commencement of the project. Once the project is underway, the respondents recognised the importance of involving the future users of the system and of holding regular steering group meetings. However, all the respondents still seemed committed to a development model where:

- A fixed specification is produced
- The vendor commits to this specification at a fixed price
- Both parties endeavour to minimise the number of changes allowed.

Indeed one respondent even suggested that no changes should be allowed once the specification has been agreed between vendor and client.

However, more typically users restricted themselves to the objective of ensuring that both they, the client, and the vendor had a mutual understanding of the specification prior to system development and that change control procedures were strictly enforced once development was underway.

Surprisingly, more flexible means of establishing system specifications, such as prototyping were not mentioned by even a single respondent as a means of reducing the probability of project failure.

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Users can employ a number of contract mechanisms to support risk mitigation. The most frequently adopted methods include:

- The identification of milestones in contracts
- The adoption of performance clauses
- The use of guarantees of some kind
- The provision of bonus payments for early completion or under-budget performance.

INPUT expects the use of bonus payments, a mechanism infrequently used at present, to increase as a practice for large contracts. Factors likely to encourage the adoption of bonus payments include:

- Vendors continuing to push for more incentive-based pricing. Bonus payments for early completion, etc., providing a straightforward mechanism for accomplishing objectives
- A growing number of systems integration projects resulting from business process reengineering initiatives. When this is the case, many vendors tend to push for value-based pricing or bonus payments by tying their revenues for SI services directly to the financial benefits achieved as a result of the business reengineering effort
- Increasing perception of the relationship with a systems integrator as a partnership where risks will be shared. Thus, sharing the financial regards in the form of bonus or incentive payments is a logical way to reward exceptional performance on the part of the integrator.

The corollary of *bonus* payment is of course *penalty* payments, and these are likely to co-exist even if only at a formal contractual level. In effect these mechanisms can be viewed as part of a shift towards *shared risk/shared reward* arrangements.

Shard risk/reward systems concern the identification of areas of uncertainty in projects, typically of system functionality, at the time of specification. Shared risk/reward systems will then be designed around a target price or agreed level of effort between the client and the vendor. Overruns are dealt with using some form of agreed discount (penalty) to the client which may be calculated on a sliding scale. Underuns are dealt with on an analysis basis with the reward (vendor bonus) being shared.

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IV

Risk Management Approaches in SI Projects

A
Management Actions to Contain Risk

1. Contract Trends

A number of trends are observable in the market for major SI development contracts which can be classified under the following headings:

- Partnership approaches
- Project pricing initiatives
- Contractual commitment to client involvement.

The trend towards a partnership approach or joint venture development is more observable in the US market than in the European market. This type of approach is certainly appealing where the project involves extremely high-risk elements utilising advanced or unproven technology. This area is more fully addressed in Chapter V below.

Changes in project pricing approaches, more fully discussed in Chapter VI, include:

- An accelerating shift from time and materials pricing to value-based or other incentive based approaches
- A movement toward pricing schemes such as *range-based* and *phase-fixed* which encourage risk sharing (with or without incentive clauses) and acknowledge at the start of a project that there may be elements of risk that simply cannot be properly estimated in financial terms.

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Contractual commitment to client involvement encourages the inclusion of detailed contract specifications for user resource requirements down to the level of phase and task.

Exhibit IV-1 lists possible important trends in large project contracting and indicates the potential benefits and impacts of each one.

Exhibit IV-1

Trends in Systems Integration Contracts

Trend	Impact/Benefit
Joint Venture for Leading Edge Efforts	Formalises the concept of risk sharing with shared benefits
	Promotes user involvement in the design process
Shift to Value-based and Incentive Pricing	Increased incentive for integrators to apply innovative approaches
	Improved partnership relationship
	Lower user costs to cover risk
Movement Toward Range-based and Phase-fixed Pricing	Objective recognition of the inability to define certain elements of risk
	Lower costs to user and an inducement to user participation to the partnership
Contractual Commitment to User Involvement	Insures user resources will be available to meet contract commitments
	Increase sense of partnership and participation

Source: INPUT

2. Management Process Trends

The impact of an increased awareness of risk in large project contracting is leading to a trend for more and more client involvement in the management processes used for project implementation.

Some of the more significant processes that are beginning to make their mark on the project contracting industry are:

- Use of computer-assisted continuous monitoring processes supported by on-line computer applications

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- Use of specialised quality assurance assessment teams to provide early problem identification and recommend solutions
- The inclusion of client personnel in quality assurance, on-going risk assessment and other project monitoring and control processes, formerly considered internal to the vendor
- Use of prototyping and application modelling to ensure user satisfaction with the end product.

Exhibit IV-2 lists these project risk management process trends and indicates possible impacts and benefits of each one.

Exhibit IV-2

Trends in Systems Integration Project Management Processes

Trend	Impact/Benefit
Computer-assisted Monitoring Process	Early identification of problems, and access to expertise for resolution Integration of users into the monitoring and management process Provision of the data necessary for management of more sophisticated contract schemes
Commitment to Formal QA Processes	More objective evaluation of current status and suggested changes Ongoing monitoring of quality through the use of computer-based tools
Inclusion of User Personnel in Vendor-managed Processes	Promotes the partnership concept by direct participation in an open setting Provides more direct user feedback than formal status reviews, etc.
Prototyping and Application Modelling	Provides cost effective method of testing the quality and reality of specifications early in the process Helps set user expectations for functionality of the delivered system

Source: INPUT

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B
Risk Assessment Approaches

1. Risk Assessment and No-bid Rates

Approaches for assessing project risk at the bidding stage and supporting a bid or no bid decision vary considerably from vendor to vendor at the detailed level. However the majority of vendors interviewed (eight out of the ten) were able to describe some form of formal risk scoring, using proprietary questionnaires or check lists, for the risk assessment stage of major projects.

The remaining two vendors described the use of some form of model. These were:

- An approach using a software based risk analysis tool. The assessment team models a range of outcomes and models the project completion 1,000 times. This gives a balanced out turn, and if, for example, there is a 50% overrun, then the bid team would re-visit the project plan or change the contract date

- The use of *influence diagrams* which allow the graphical illustration of risk factor inter-relationships. Once the impact of each risk factor is understood and the cost and probability ratios estimated then risk can be assessed comparing *sums of money*, which also encompass time issues. This allows the development of probabilistic networks.

One would expect that there was a limit of risk beyond which a vendor would be unprepared to go and that an expectation of exceeding this limit would lead the vendor to drop out of the opportunity. However, three of the vendors interviewed claimed a zero percentage of no-bid situations.

For the whole sample the average no-bid rate on invitations to tender was 5% with the highest rate, reported by one vendor, being 25%. Most vendors gave a percentage for no-bidding in the range zero to 10%. This compares dramatically with the statistic derived from the equivalent US survey, where the vendors on average claimed to no-bid on 20% of their potential opportunities.

However it would be wise to bear in mind a number of caveats regarding the interpretation of these statistics since widely varying approaches at the pre-sales level make direct

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comparisons of vendor practice very difficult. Some light can be thrown on this issue by reviewing the vendor comments on bid assessment provided below:

- "Most people are risk averse, this organisation's proposition is that it wants projects that are challenging. The company actively seeks the high risk area because competition here will be limited, contracts will be lengthy, profits will be high"

- "The figure is low because we are professional risk takers - we are in the managed risk business - if you are really going to bet the business, we are the only company who can ensure you win"

- "We formulate a response where there is an acceptable level of risk. We put the unacceptable parts of the project (in terms of risk) under different pricing terms (i.e. time and materials)."

It can be seen that some vendors will go to preliminary proposal stage on virtually any project that they felt they had the competency to undertake, but will back away subsequently from a relatively high proportion of the opportunities that they pursue.

Other vendors may give only cursory assessment to many bids which are solicited and therefore do not count them in their statistics for bid withdrawal based on a detailed assessment of the risk element. This would explain a much lower rate of bid rejection.

2. Risk Scoring - Formal Methods

In order to assess the project elements that are at risk vendors have to rely on expert judgement, but use risk assessment questionnaires and check lists in order to formalise the process as referred to above. Most risks exist within the minds of the people working on the project, as one vendor expressed it, "risks are people's worst nightmares." Consequently a number of vendors commenced their formal approach to risk assessment with a brainstorming session.

Formal risk assessment involves the assignment of point scores to various elements of the proposed project to reflect risk. The scores are totalled to establish an overall risk for the project. In some instances this is done on a task-by-task basis. In others, the

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project is scored in its entirety. Once the high risk tasks or high risk aspects of the project have been identified, most vendors apply additional analysis to assess the risk in more detail and develop strategies to reduce it.

The overall scoring is then adjusted to reflect the revisions. Some vendors actually conduct this analysis phase jointly with the prospect. Through this approach they establish a joint understanding with the prospective client of the risks involved and can mutually agree reasonable expectations for its containment.

Once the scoring process has been completed, most vendors apply guidelines or standards to assist them in determining whether they are willing to accept the risk level indicated by the scoring.

One vendor described the use of a *process maturity* model which allows the team to evaluate the level of sophistication of the project management skills available. This method recognises six dimensions of change, from strategy through to business infrastructure. Each dimension is rated on a scale of 1-10 to indicate levels of control. The model allows for determination of levels of risk both before the project commences and during the life-time of the project.

The kinds of factors considered in risk scoring techniques cover a wide variety of issues related to the project itself, as well as the prospect. The following is a composite list of the types of factors that are included in risk scoring approaches:

- The overall length of the project
- The complexity of the required technology
- The proposed pricing scheme
- The prospect's clarity on specifications
- Previous experience of the industry or of the application package
- An assessment of the strength of the prospective client's project manager
- Levels of competency of the client's IS personnel

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- Willingness of the client to utilise the vendor's methodology
- Cultural fit between the two organisations
- Previous experience with the potential client
- Experience of the vendor project manager.

Most professional services organisations that use risk scoring methods have developed formal guidelines based on historical data to make these judgements. This has been required because many of the factors require subjective evaluation. The scoring guidelines are updated periodically to reflect recent project history using an historical database.

3. Margin-based Analysis

This approach uses resource costs and volumes as the key parameters in assessing the risk associated with a project. The scheme works in the following way:

- An overall project plan at the task level is prepared for the project and the firm's standard pricing applied by task
- An independent risk assessment team examines the proposal pricing, and through interaction with the proposal team, identifies high risk tasks
- Adjustment factors (multipliers) are agreed to by the risk assessment and proposal teams then applied to each task. The result is a *worst case cost* scenario
- A standard margin is applied to determine the final price and as assessment is made as to whether the resulting price will be acceptable (or within an acceptable bandwidth in competitive bidding situations)
- Assuming a positive judgement is made, the proposal will be submitted using the factored pricing.

As in risk scoring, individual vendors' internal processes for using the technique vary with project size and type. Proponents of this type of analysis say that it has advantages over risk scoring, because the output can be used directly by proposal teams to

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discuss the cost impact of risk with the prospect on a task-by-task basis.

4. Assessment of the Client

Another approach to project risk assessment focuses on the client's relative capabilities. This technique emphasises the prospect's contribution to the risk equation. Judgements are made (and may be scored) regarding the prospect's organisation, system skills, political commitment to the effort, etc. The project is priced using the vendor's normal pricing scheme and a factor is applied to the margin to cover the risk.

This is clearly a simple approach and on the surface does not appear to be as thorough or sophisticated as the other approaches discussed in the previous two sub-sections.

However, protagonists for this approach indicate that their normal pricing scheme accounts for the risk contribution inherent in the project, making a separate analysis unnecessary.

C
Risk Control Processes

Vendors use a wide variety of techniques, models and tools to deal with risk at various stages of the whole project life-cycle, covering:

- Estimation of project costs and pricing
- Project Management
- Sub-contractor management.

1. Project Requirements Estimation

Vendors have invested considerable effort in developing and refining estimating techniques. Competitive bidding and the frequent requirement to commit to fixed prices provides a strong incentive to develop estimates that are as accurate as possible. Furthermore, a major error during this phase will make a project unprofitable regardless of how well it is executed.

Most vendors have evolved a proprietary methodology to deal with estimating. However, there appear to be some fundamental components which are found in common, these include:

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- Function point analysis which is used to establish general resource requirements and the overall scope of the project
- COCOMO
- The application of multiple estimating, two estimates generally being the industry practice, using different estimating teams. Results are compared and where significant differences exist additional analysis is then undertaken in order to arrive at a reconciliation.

Other approaches mentioned included the use of *flash point analysis* and methods based on internally collected metrics. Proprietary methodologies use models based on these metrics to factor projects for risk. In addition to dealing with technical complexity, many of these models also account for the level of experience of assigned personnel. Some of these methodologies incorporate components of CASE methodologies such as IEF. Vendors have also established costing standards for individual tasks that can be used to produce project pricing. Some vendors will also use *Monte Carlo simulations* to provide probability distributions of project costs.

In respect of project pricing vendors know that their best protection against error is the utilisation of reliable and tried and tested resource estimating techniques. The approach must break the project down into specific tasks and explicitly account for risk within each task. Vendors are then in a position to employ incentive mechanisms, range-based and phase-fixed contract mechanisms wherever possible to reduce the exposure to financial loss resulting from unforeseen events.

2. Project Management Approaches

Although project management practices vary widely in terms of the detailed functions exercised, they demonstrate similar generic themes, e.g. regular project reviews and the use of procedures.

Nearly all the vendors interviewed for this study cited the use of standard project management software packages, increasingly PC based, at least for use on smaller projects. The main packages stated as being in use, together with their frequency of mention, are listed in Exhibit IV-3.

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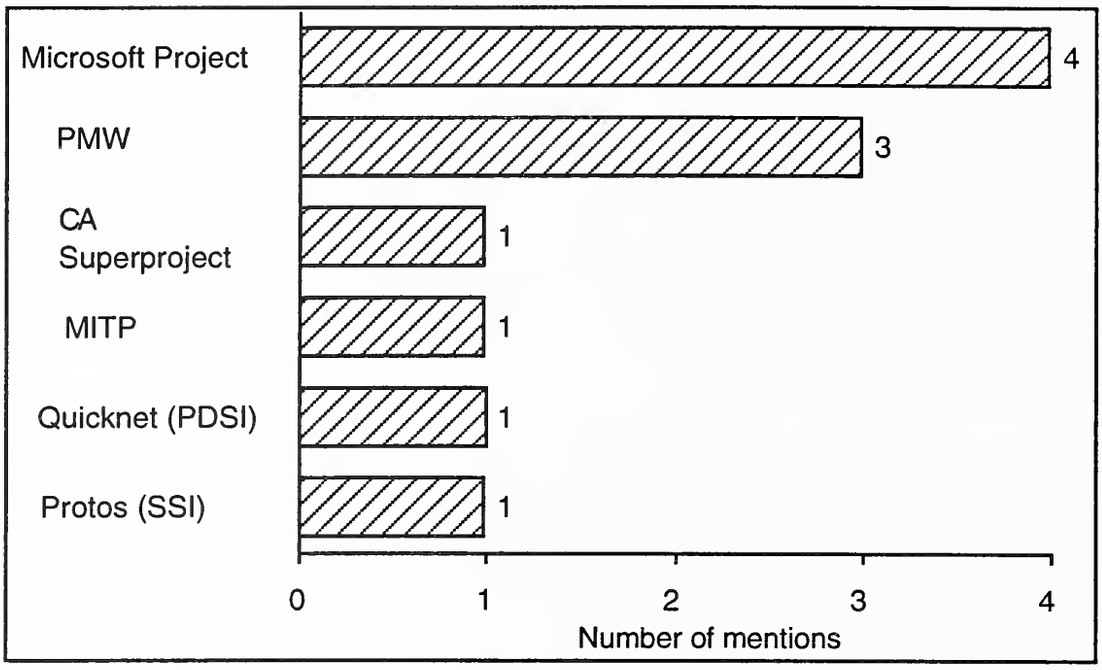
Exhibit IV-3

Vendor Use of Project Management Tools



Survey of ten European vendors. *Source: INPUT*

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Naturally, such methodologies as SSADM and PRINCE were frequently mentioned as was the need for ISO 9000 certification.

Having the quality management system in place was considered of particular importance by a number of vendors interviewed. One vendor for example, commented "having these quality systems (i.e. ISO 9000) and the overriding quality policy which sits behind them, drives the project management process. This attitude and response is supported by training and tools."

However, it needs to be recognised that it is the quality and experience of the project managers that is the most vital ingredient, as another vendor commented "tools aren't the answer, the tools simply allow the project team to do the job."

Open communications between all members of a project team was another success factor noted by one respondent. This vendor also stressed the need to get the project team mirrored on the user side and to thus engender an open culture flowing between the two parties. When problems are allowed to surface in this way there should be a formal process through the project managers to ensure that changes are *formally* agreed between the two parties. The approach should be, *when you come to an agreement , formalise it.*

Another vendor referenced a formal project management development process that was institutionalised within the company in order to ensure a process of continual improvement. This vendor considered that individual's project management skills were paramount, rather than the actual project management tools being used.

3. Management of Sub-contractors

The area of subcontracting and bid relationships is becoming much more fluid than has previously been the case. This flexibility is likely to increase as the need to access specialist service expertise and specialised technical skills becomes more and more important.

In response to this trend vendors will need to place an increasing emphasis on planning, control and reporting mechanisms in relation to subcontracting on major project bids.

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Two of the vendors interviewed cited the need to appoint a dedicated manager to handle subcontractor relationships on particularly important projects. Factors to be managed include the functional requirement from the subcontractor, the relationship with the vendor, cost and pricing issues and the level of added value participation being brought to the whole project bid.

One vendor interviewed, stressed the need for a clear definition of the roles and responsibilities of subcontractors. Methods for doing this included Work Breakdown Software (WBS) and Product Breakdown Software (PBS).

Several vendors placed particular emphasis on the need for imposing their own strong project management disciplines onto their subcontractors. This process needs to recognise the need for different organisational cultures to co-exist, and consequently this is not a straight forward procedure. A lot of management energy needs to be put into developing subcontractor relationships and the right skills are needed to bring the two parties together successfully. Having an open culture in which issues and problems are aired may be very supportive of these aims.

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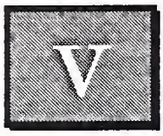

Vendor/Client Project Partnerships

A
Risk Reduction through the Partnership Concept

An important development in risk management for large project contracting is likely to be a movement towards increased sharing of risk. This trend will impact both the nature of the contracts and the management of projects.

Vendors are likely to promote risk sharing in the belief that it will increase the probability of success as well as improve profits over the long run.

Users may become more receptive to the increasingly sophisticated pricing and contracting approaches required to accomplish risk sharing.

These underlying forces are impacting the nature of the contract arrangements between users and vendors and are likely to lead to the need for an emphasis on the partnership model for client/vendor relationships in the future.

It is a commonplace for IT systems and services vendors to describe their relationships with their clients as partnerships. A partnership implies the sharing of mutually agreed and accepted goals, the common commitment of resources to achieve them and a sharing of rewards as well as losses. Some of the users interviewed were obviously in sympathy with the partnership concept using expressions such as:

- "Understanding each other from the outset (of the project)"

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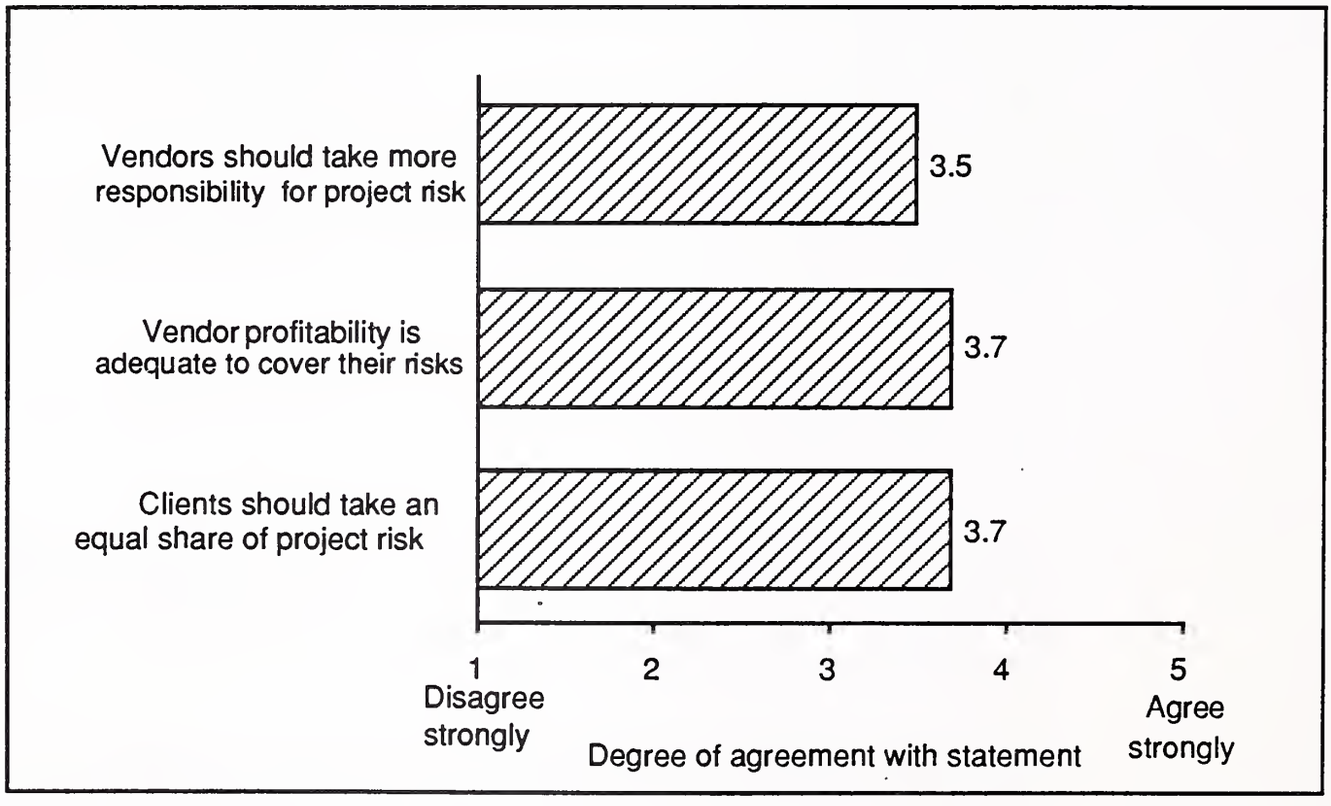
- "Common objectives of project success"
- "The partnership has to be visible throughout the duration of the project."

It seems likely, however, that partnership conditions are met in only a number of cases and that the adversarial buyer /seller model still dominates the underlying relationship for the majority of situations.

Supporting evidence for this view is contained in Exhibit V-1, which shows ratings for user agreement with a set of statements regarding the sharing of risk in large IT project contracts.

Exhibit V-1

User Attitudes to Risk - Europe



Sample of 60 users. Standard error = 0.15 *Source: INPUT*

There is a reasonably strong agreement with the idea of equal sharing of project risk (the partnership model), but also an indication that users do not believe that vendors take a sufficient proportion of risk in the execution of projects.

This seems to imply that users currently perceive that they shoulder the bulk of the risks inherent in the project despite the

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This seems to imply that users currently perceive that they shoulder the bulk of the risks inherent in the project despite the use of fixed price contracts. Users also tend to believe that vendors are well rewarded financially and that their profits from project contracting are sufficient to act as insurance cover to compensate for any problems that might arise.

Overall users tend to favour the use of penalty clauses rather than vendor incentives as a means of achieving more favourable project outcomes. For example a number of respondents suggested that project risk could be reduced by tightening contract terms and by the introduction of penalty clauses, typically for late delivery of the project. These sentiments are clearly not in line with a partnership view of project contracting.

Negative comments about the partnership approach to projects by users included the following:

- "The (partnership concept) is overstated and does not mean anything"
- "I do not believe in partnership"
- "I do not subscribe to the partnership philosophy"
- "Partnership is a concept, nothing else"

However, to put the overall position into perspective, there clearly exists a group of users who value the development of a partnership with their IT suppliers. The following comments testify to this:

- "We like to think that a partnership exists with all of our suppliers"
- "The concept of partnership is critical throughout the project"
- "Partnership is very important and is built upon trust and good relationships."

On balance, many users have a favourable attitude towards improving the quality of their partnerships with project services suppliers, even though the term has been very loosely used by the IT project contracting industry, for example one vendor commented "most vendors pay lip service to partnership - they sell its importance".

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This has left a minority of clients being very sceptical of the concept of partnership and believing it to lack much substance, as the remarks quoted above demonstrate.

However, the concept of real partnership relationships, in which both parties truly share the risks and rewards of the enterprise, does appear to be at the centre of a genuine new approach to risk containment in large project contracting.

It is not though, the attitude of this minority that is the only major issue to be faced by vendors. Another issue for vendors is the restricted scope of partnership as understood by the majority of clients. This aspect of client/vendor relations is analysed in more detail in section B. below.

B
The Role of the Vendor - User Requirements

1. Client Requirements

A basic requirement for a contract to qualify as an SI contract is that the vendor takes total responsibility for some significant part, if not the whole, of the project. However, the systems integration delivery mode still only accounts for some 20% of the total amount spent in Europe on sub-contracted systems development. It is worth bearing in mind that clients tend to view project contracting as a continuum (from small to large projects), and consequently vendors should be careful in adjusting their marketing approaches to varying client needs.

Furthermore, the user survey indicated some significant differences in client attitude towards the devolvement of complete project responsibility between different country business cultures.

The desirability for the vendor to take responsibility for different elements of a large information systems project, in the opinion of users, is shown in Exhibit V-2 for Europe as a whole.

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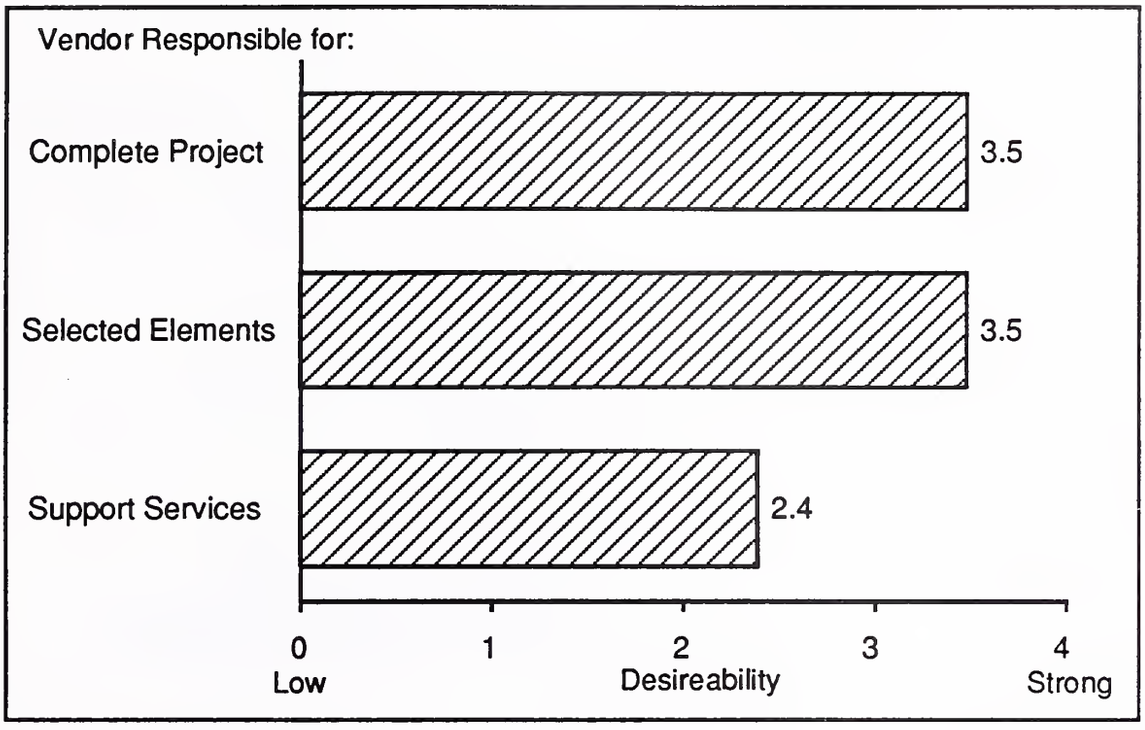
Exhibit V-2

Client Requirements for Vendor Project Responsibility



Sample of 60 European clients. standard error = 0.2. *Source: INPUT*

Exhibit V-3 shows the analysis of the same data by country sample. This exhibit shows a clear distinction, in user opinion, between the French and German samples on the one hand, and the UK sample on the other regarding their willingness to sub-contract total project responsibility.

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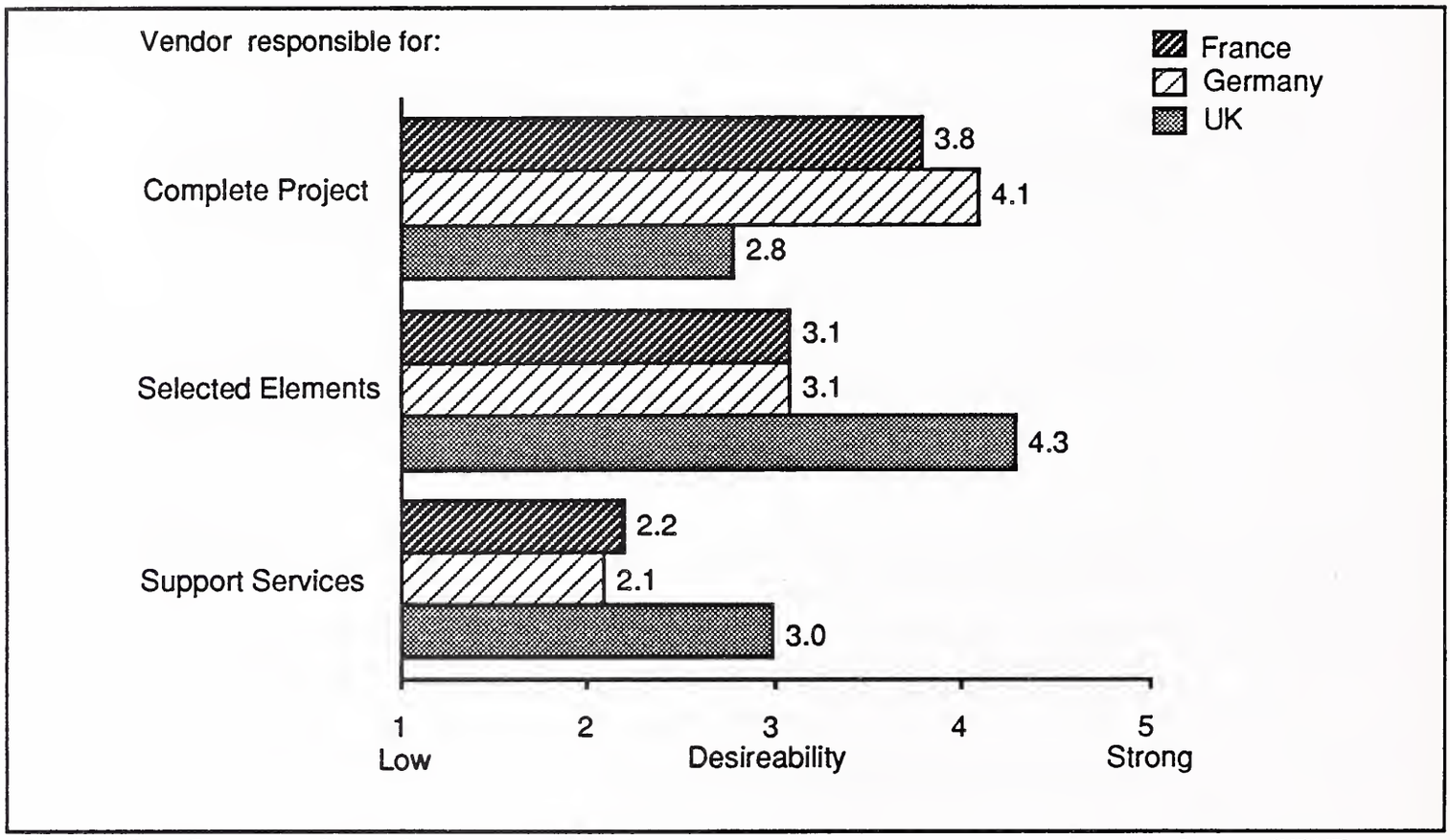
Exhibit V-3

**Country Differences –
Client Requirements for Vendor Project Responsibility;**



Sample of 60 European clients. Standard error = 0.2. *Source: INPUT*

Interestingly the responses to the same question in a recent US survey matched very closely those of the UK sample analysed in Exhibit V-3. The UK/US comparison is shown in Exhibit V-4. This distinctly different profile of requirements in respect of project responsibility maps to the very different business culture models that exist between the Anglo-Saxon business environment and that of Continental Europe.

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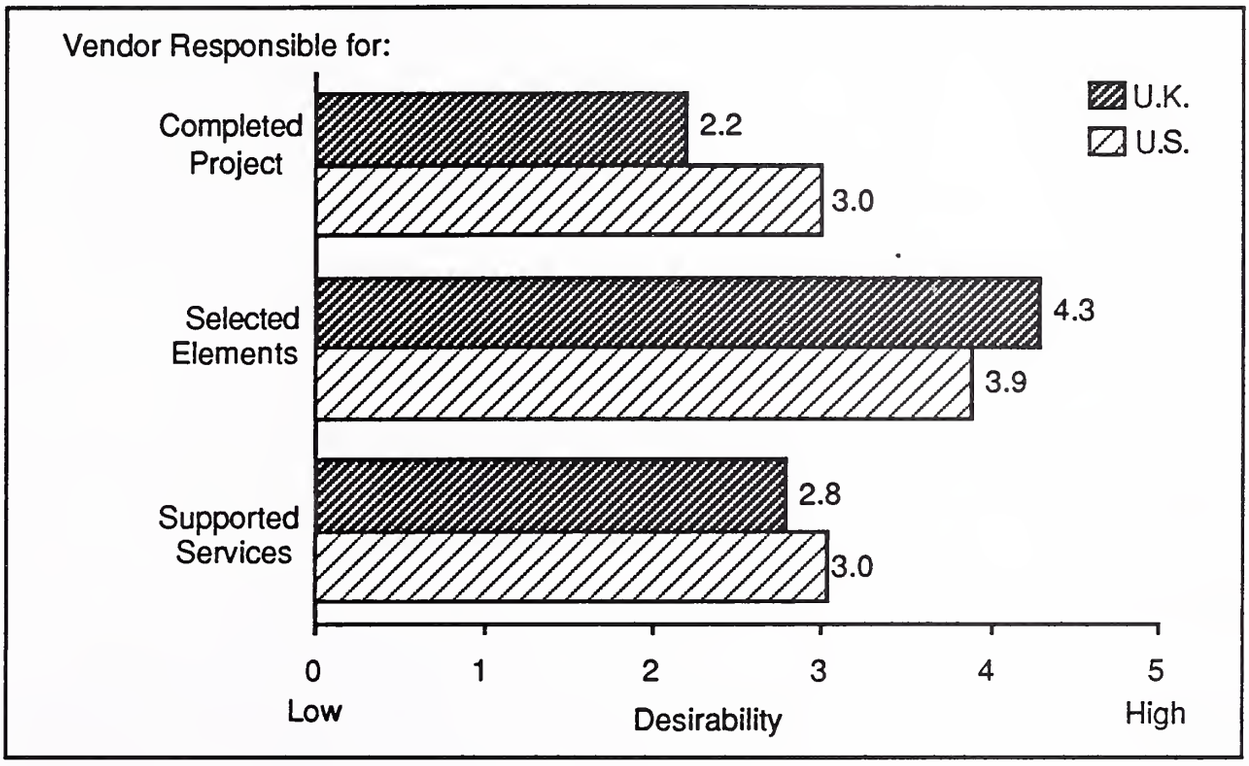
Exhibit V-4

User Attitudes Towards Project Responsibility – United Kingdom and United States Comparison



Sample of 60 European clients. Standard error= 0.2. *Source: INPUT*

In the UK, as in the United States, there has been a distinct cooling of enthusiasm towards major project contracting over the last few years. Users have been noted placing stronger preference for smaller projects and quicker results payback. Growing confidence on the part of IS managers to tackle client/server communications based developments using more and more standard components has also helped to fuel this trend.

This research points vendors towards a reassessment of one of the fundamental assumptions of the SI movement, that increasing numbers of clients want or need to devolve complete responsibility for a project to a third party organisation. Clearly, distinctly different approaches are required in different business environments.

Naturally, there will continue to be a demand for major high-risk project contracting services and some vendors will continue to place special emphasis on seeking out these opportunities.

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However, changes in IS responsibility within organisations and increasing commoditisation of IT markets is leading to some client's preferring to sub-contract only selected elements of a project.

Some further insights to user needs in project contracting are provided by the analysis shown in Exhibit V-5. Users were asked to state, unprompted, what areas they felt should be the responsibility of the vendor as opposed to their own, in respect to large IT projects. This exhibit highlights the key areas for vendors to focus upon in their marketing of project services:

- Development and integration services
- Implementation
- Detailed systems design
- Training

Exhibit V-5

Allocation of Responsibilities in System Development Project

Area of Responsibility	Allocation of Responsibility Percentage of responses		
	Vendor	User	
		Business Manager View	IS Manager View
Development and integration	28	5	15
Implementation	23	4	12
Detailed systems design	19	-	-
Overall management control including cost control	11	39	15
Training	9	3	2
Defining software product requirements	3	3	3
Specifying system requirements	3	27	32
Specifying business requirements	—	11	15
Others	4	8	6
Total Percentage	100%	100%	100%

Sample of 60 European users. *Source: INPUT*

In contrast to these areas of need, vendors should tread carefully when proposing overall management control and undertaking the specification of system requirements. Perhaps the existence of a genuine feeling of partnership between the two parties would

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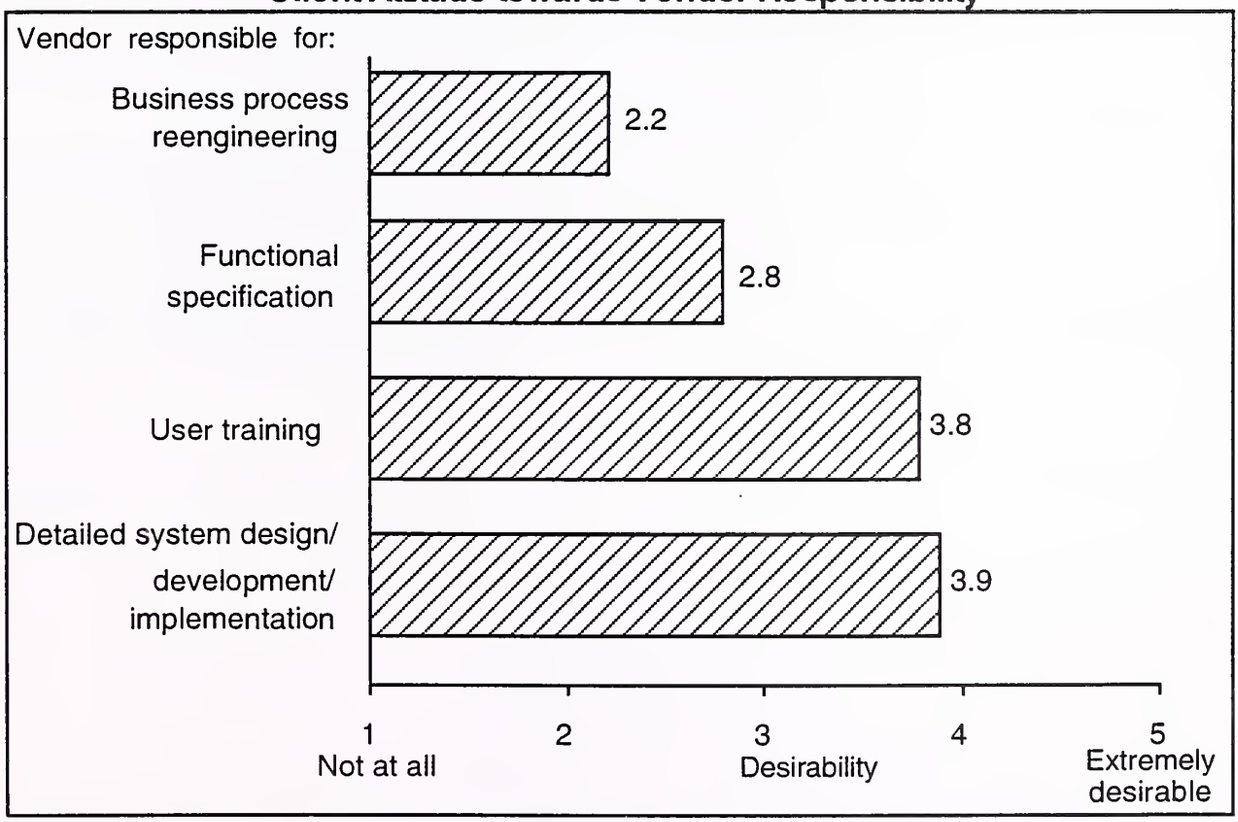
allow vendors to gain significantly more business than is possible when they retain the impression of being a third party organisation.

Above all, whilst vendors need to recognise that all clients are different, the key to sales success is the demonstration of key competency in the area that is perceived by the client to be the biggest problem. This is the real meaning of *solutions* marketing, not the supposed ability to meet *all* of the needs that a client may have. The development of the partnership relationship, interpreted as a complete understanding of the client's needs is clearly a vital part of this approach.

Users were questioned regarding their interest in vendors taking responsibility for a number of specific activities in relation to major project contracting. The analysis of their replies is shown in Exhibit V-6. The analysis of these results, firstly between the business managers and the IS managers in the survey, and secondly by country group is shown respectively in Exhibits V-7 and V-8.

Exhibit V-6

Client Attitude towards Vendor Responsibility



Sample of 60 European users. Standard erro = 0.2. *Source: INPUT*

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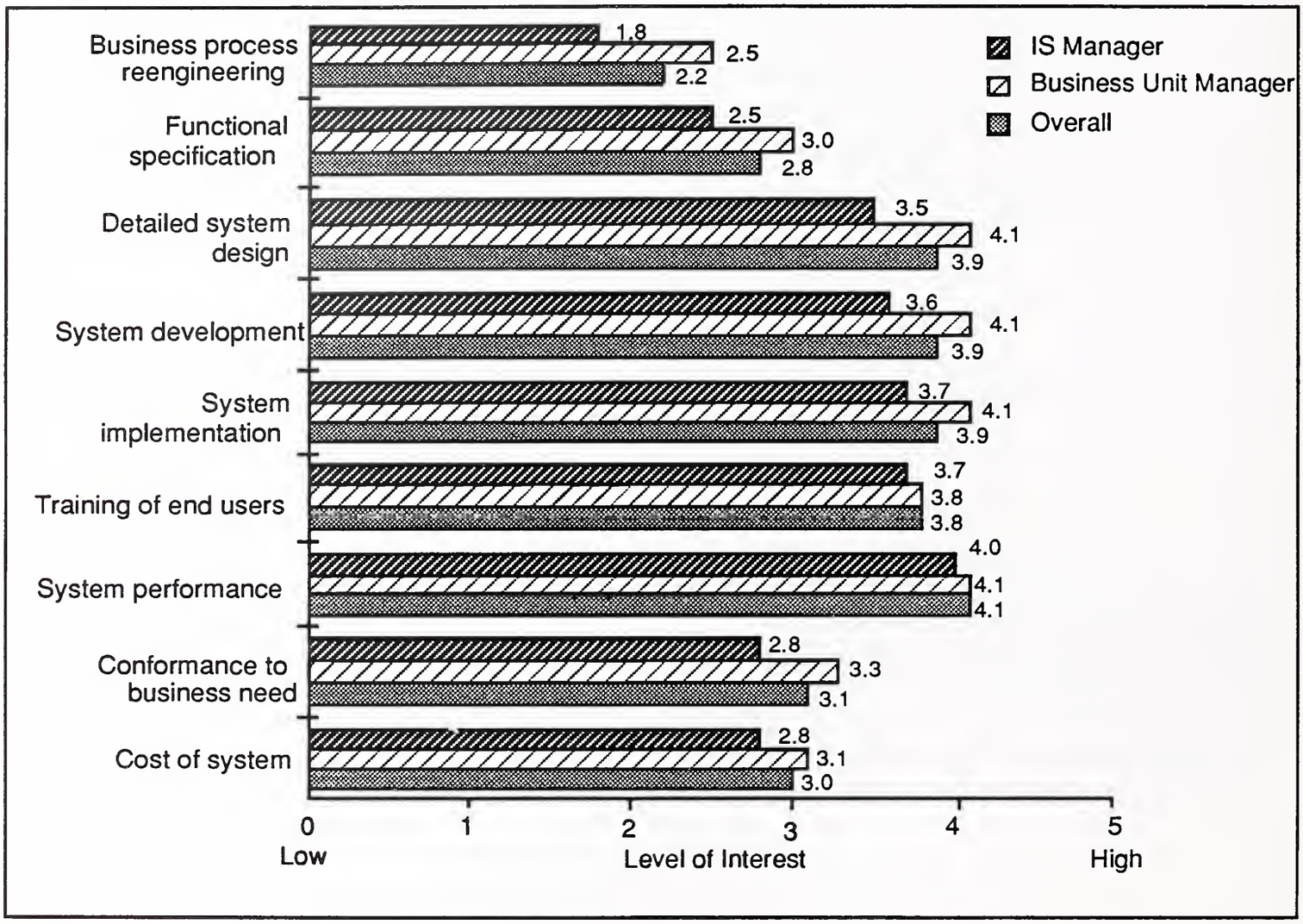
Exhibit V-7

User Interest in Vendor Responsibility for Project Related Activities - IS Manager and Business Unit Manager Analysis



Sample of 60 European users. Standard error = 0.2.

Source: INPUT

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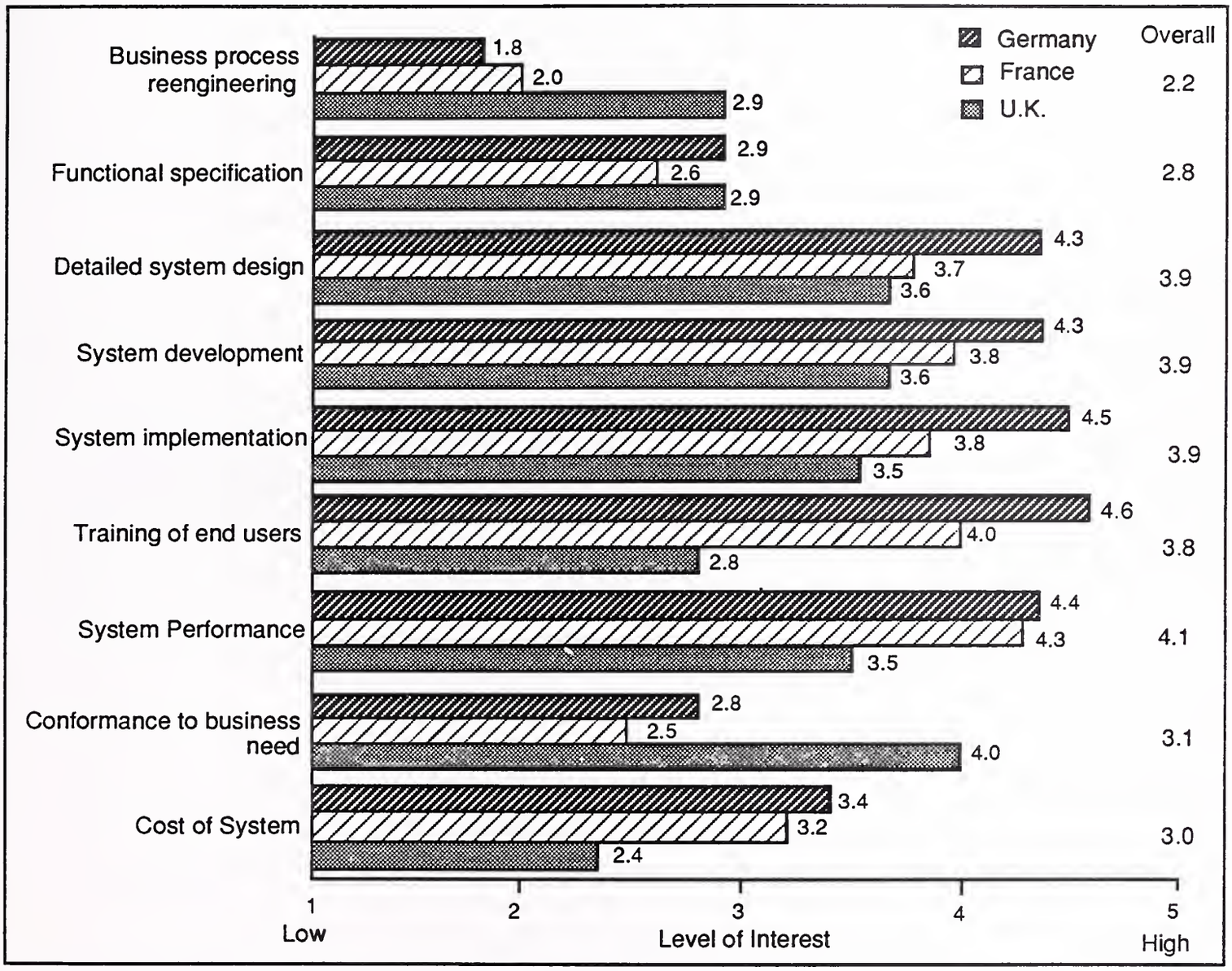
Exhibit V-8

User Interest in Vendor Responsibility for Project Related Activities - Country Group Analysis



Sample of 60 European users. Standard error = 0.2. *Source: INPUT*

Managers still strongly believe that they should be responsible for business process re-engineering and for developing statements of requirements and functional specifications. This view is shared equally by both IT managers and senior non-IT executives. Then vendors are expected to quote a price to meet a functional specification, and, on acceptance, to become responsible for detailed system design, development, and implementation.

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Managers identified the agreement of requirements and business objectives as the key area where quality of partnership is critical to project success. However, in spite of this recognition, users remain reluctant to involve vendors in identifying their business objectives and in producing initial system specifications to meet their needs.

Another issue raised with users was the extent to which they favoured the use of a preferred supplier for contracting information systems projects. The results are shown in Exhibit V-9. Despite the advent of an open environment for IT technology and a more competitive environment, there still exists a considerable bias towards using a preferred supplier.

Exhibit V-9

User Attitude Towards Favoured Suppliers

	Percentage in favour of using a favoured supplier (%)
IS Managers	67
Business Unit Managers	52
Total sample	58
United Kingdom	70
France	58
Germany	44

Sample of 60 European users. *Source: INPUT*

Reasons given for this included the lock-in factor of proprietary systems and corporate policy, but mainly focused on the need for proven relationships that delivered benefits deriving from the vendor's knowledge of their business, proven track record and stability. Some typical user comments were:

- "We want to use suppliers that we know and have worked closely with in the past"
- "You build a good relationship and the vendor has proven their ability"

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- "In reality we prefer to work with specific suppliers, but we don't want them to know"
- "We value their knowledge of our business"
- "We require stability and vendors with proven track records."

The opposite point of view was represented by such user comments as:

- "I like to encourage competition, it's a buyer's market"
- "We operate a UNIX system and have decreased our reliance on any one supplier"
- "It is a market where supply exceeds demand"
- "We did in the past but with the advent of open systems we have no preferential suppliers"
- "We are always looking for lower costs and additional expertise; each project differs."

These views indicate the challenge of establishing long term partnership type relationships amongst a significant part of the market which is seeking to leverage the competitive market for open systems.

2. Client Recognition of the need to Improve Partnership Relationship

Exhibit V-10 indicates respondents' current ratings of the quality of partnership achieved with their project services suppliers, and the importance they attach to improving the quality of these partnerships.

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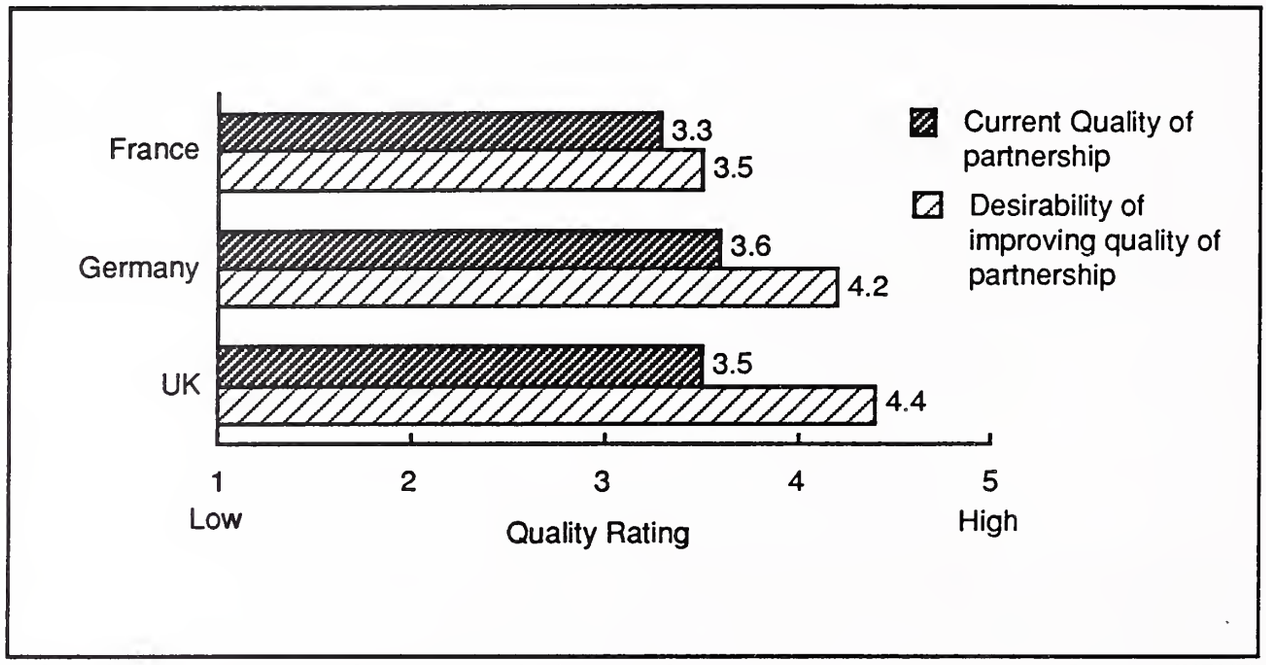
Exhibit V-10

Partnership Quality Project Services, Europe



Sample of 60 managers. Average standard error 0.2. *Source: INPUT*

The ratings given to the current quality of partnership are moderate, rather than unacceptable, and are comparable across France, Germany, and the UK. However, clients in the UK. and Germany show a strong desire to improve the current quality of partnership between themselves and their project services suppliers. This is an encouraging sign for vendors. In addition, both users and IT managers expressed strong agreement with the statement— "Improved partnerships would lead to improved ability to meet the client's business need".

C
Vendor Action to Create Partnerships

1. Client Advice to Vendors on Partnerships

Users proffered a variety of suggestions for improving the quality of partnerships between themselves and their clients. Fundamentally they can be classified as falling into two main areas, those related to the agreement of the initial objectives and requirements of the project and those related to the on-going conduct of the project.

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In the case of the establishment of the initial objectives users stressed the importance of such factors as:

- The vendor's understanding of their business
- The need to relate IT functionality to the business objectives
- Agreement on time scales that are realistic
- Agreement on how to measure completion and performance of the provided solution.

With respect to the on-going conduct of the project the key factors to emerge were:

- The quality of account management
- Visibility of the partnership throughout the duration of the project
- Good communications and involvement of users

Users felt that the quality of partnership could be improved in the following areas:

- The quality of personal relationships. For example, one user recommended that the vendor's staff be sent on a *customer relations* programme
- The importance of senior management involvement on both sides in order to eliminate ambiguity
- Getting vendors to commit to adhering to the client's policies
- Preparedness of both sides to admit mistakes, clearly easier if a partnership environment has been established
- The introduction of some shared goals in the project that would need to be agreed at the outset of the project
- Better allocation of resources, a number of users commented on vendors running projects on inadequate resources, for example one user commented "vendors must commit time - too often a vendor is over exposed and their staff over committed."

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Some users specifically referenced risk issues recommending that more attention should be paid to penalty clauses and getting more attention paid to complying with risk management clauses within standard contracts.

2. Persuading Clients to Co-operate

Managers still tend to believe that in the case of IT projects, the partnership begins once the specification has been finalised, tendering completed, and the project awarded. Accordingly the main steps that managers perceive will improve the quality of partnership between supplier and client tend to be tactical ones such as:

- Maintaining good working/personal relationships
- Ensuring senior management involvement and support
- Holding regular review meetings
- Ensuring that a mutual understanding of the project's objectives is achieved between client and supplier.

While these measures are all worthy ones, they do not begin to address the really fundamental issues of partnership in a way that would be understood in, say for instance, manufacturing industry. Most managers have little awareness of the potential benefits that could be derived by developing long-term relationships with preferred suppliers and by involving these preferred suppliers in identifying ways in which IT could be applied for the benefit of the business. It is important that vendors educate potential clients in these types of approach if organisations are to take advantage of trends such as business reengineering.

If vendors continue to be used principally for technical aspects of projects such as detailed design and development, then users will continue to find that their expectations from IT are unfulfilled.

3. Longer Term Considerations

It would seem self evident that vendors want to develop long-term relationships with *quality* customers. In developing a partnership model they would hope to:

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- Reduce risk through the development of a better developed common understanding generated by the relationship
- Reduce the overall cost of sales.

Long term relationships may then evolve into other service modes, particularly the *outsourcing* of systems and applications. As such long term partnership agreements develop, it is possible that the actual contract between the supplier and the buyer will decrease in importance in terms of the day-to-day management of risk. In this scenario the parties in the partnership will need to specify the processes by which risk and other issues are managed, thus providing a framework for the relationship rather than a blueprint for a specific engagement.

Some vendors, for example Logica, have been successful recently in developing a joint venture approach with their clients. Prospective clients see some advantages in this. In particular, they perceive that the initial project will be comparatively low cost, and that vendor performance will be motivated by an expectation of future sales.

However, users and IT managers are wary of high levels of commitment as a key reference site for the vendor. In addition, users perceive that joint ventures can be risky especially for large projects. The principal perceived risks are that joint management of the project may be difficult, with the vendor trying to cater for a broader need than that of the client, and that this wider perspective may delay project completion.

Clients and vendors both talk about raising the quality of IT projects through improved co-operation between client and vendor. However in Europe client organisations have not yet been prepared to forgo competitive tendering in order to reap the benefits of improved partnership between client and supplier.

At present, the purchasing of project contracts is characterised by clients:

- Recognising the need to improve their partnerships with vendors
- But remaining committed to individual tendering of projects

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- Still needing to be persuaded of the benefits of long-term co-operation between customer and supplier.

This contrasts with the situation in the United States where the move towards increased risk sharing in system integration contracting has become one of the dominant trends in risk management strategies. This is having three important effects on the market:

- Vendors are promoting more risk sharing in the belief that it will increase the probability of success as well as improve profits over the long run
- Users are becoming more receptive to the increasingly sophisticated pricing and contracting approaches required to accomplish risk sharing
- Improved processes and technology are providing the information necessary to identify, assess and assist in the process of managing risk.

These underlying forces are impacting the nature of the contract arrangements between clients and vendors and the management processes used throughout an engagement.

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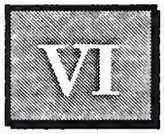

Project Pricing Strategies for Risk Reduction

A
Containing Risk through Pricing Approaches

Business integration vendors perceive a number of significant disadvantages with fixed price projects. Fixed price projects typically mean that the project specification is developed with little, or no, input from the vendor. Once a price has been agreed to meet this specification, it becomes difficult to change the course of the project. In extreme cases, this has resulted in systems being developed that meet the specification but have little relevance to the real business need. In addition, fixed price projects can become adversarial in nature, resulting in ill-matched systems for clients and low profitability for vendors. As a result, some vendors now only offer fixed price contracts when these are specifically requested by the client. Other vendors are endeavouring to pioneer new pricing mechanisms such as value-based pricing and joint ventures.

However, clients still show a marked preference for fixed price contracts. Their overall attitudes towards a number of pricing mechanisms can be summarised as follows:

- Fixed price contracts are most suitable for large projects
- Time and materials pricing can be used to hasten progress and for small projects
- Value-based pricing is of very limited applicability
- Joint ventures entail a heavy marketing involvement

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B
User Perspectives on Project Pricing

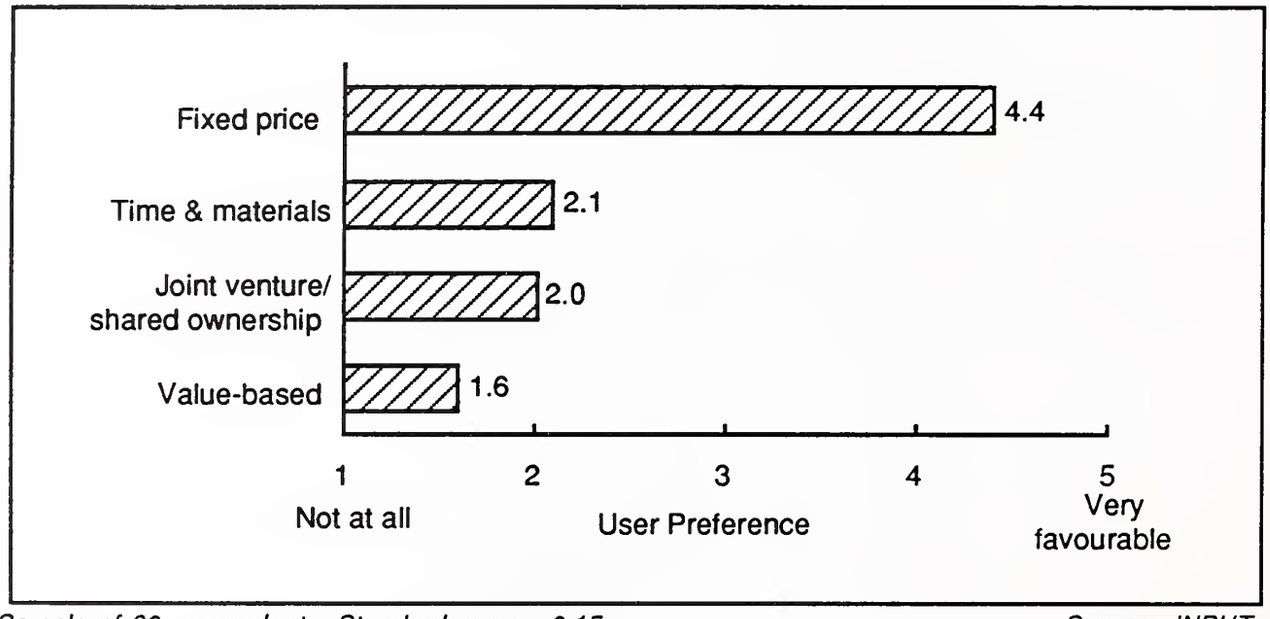
1. Fixed Price Projects are Most Suitable for Large Projects

Exhibit VI-1 shows the extent to which users and IT managers favour each of the pricing mechanisms shown.

Both users and IT managers show a strong overall preference for fixed price over alternative pricing mechanisms. However, senior non-IT executives show slightly less enthusiasm for fixed price contracts than their IT managers, and exhibit a greater propensity to consider joint ventures and value-based pricing.

Exhibit VI-1

Pricing Mechanisms Favoured by Users



· *Sample of 60 respondents. Standard error = 0.15.* *Source: INPUT*

Clients show a strong preference for fixed price projects when purchasing large systems integration style projects. Respondents' preferences when purchasing projects with values greater than $500K are shown in Exhibit VI-2.

Users and IT managers agree on the principal advantages of fixed price pricing mechanisms for large projects. The main advantages of this approach are perceived to be:

- Predictable costs/accurate budgeting
- Ability to make competitive comparisons and obtain value for money

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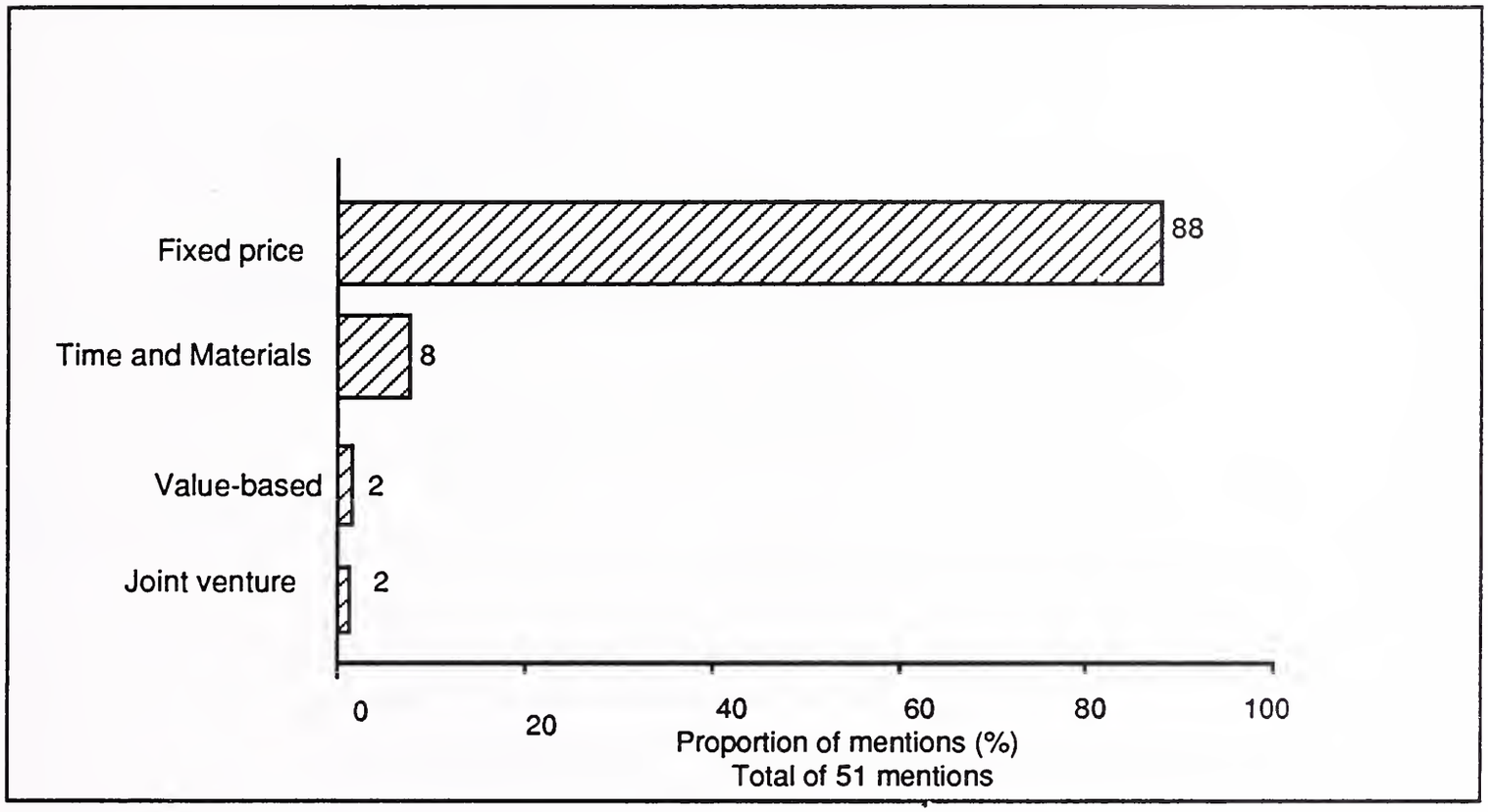
- Ease of procurement and obtaining management approval.

Exhibit VI-2

Pricing Mechanisms Preferred by Users: Large Projects



Sample of 60 of users. *Source: INPUT*

Users perceived the main disadvantages of fixed price pricing to be the possibility of disputes over changes to the specification and a possible drop in vendor commitment should the project start to overrun. On the other hand, the principal concern of IS managers was that the use of fixed price contracts could lead to an over-emphasis on price so that price became dominant in vendor selection.

2. Time and Materials is Most Applicable to Small Projects

Exhibit VI- 3 shows respondents' preferences for pricing small projects valued at less than $500k.

Time and materials pricing is widely perceived to have one significant advantage over fixed price methods, namely the ability to adjust the level of resources brought to bear on a project quickly and easily. This applies to switching projects off as well as increasing resources rapidly to meet changing needs. However,

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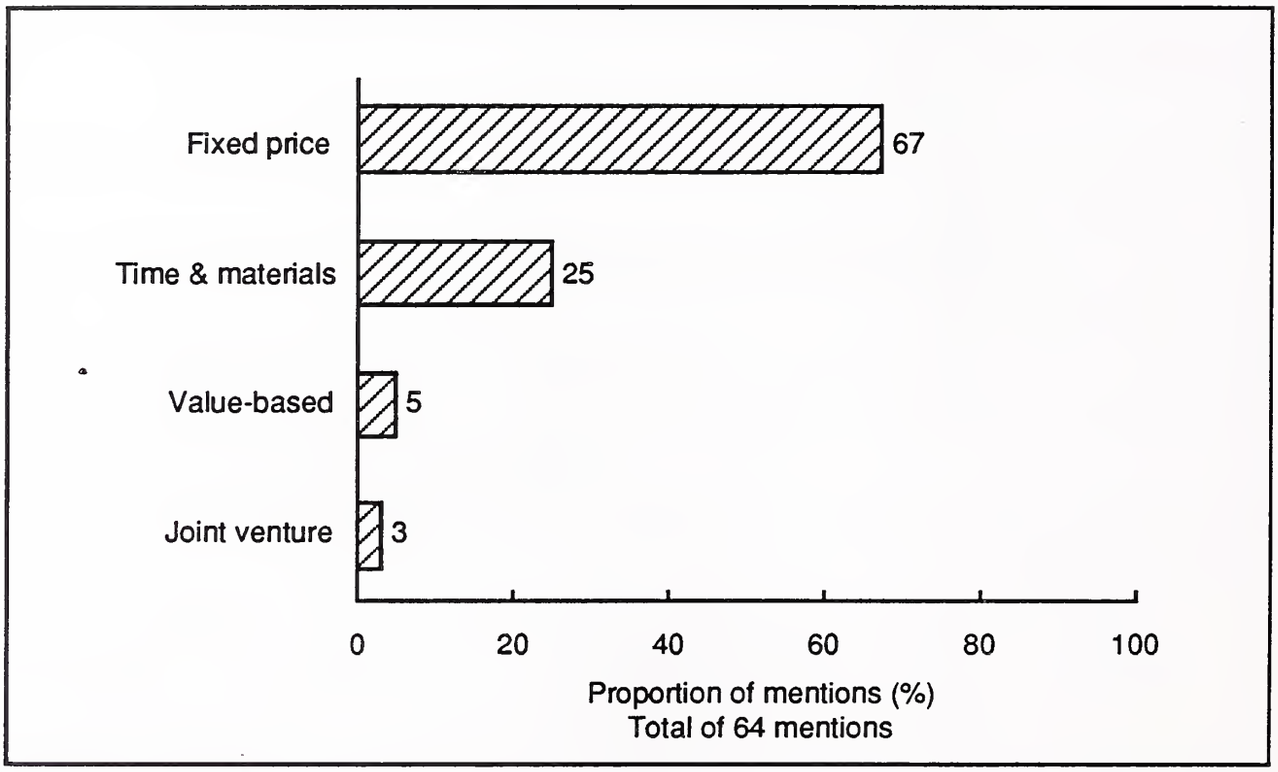
time and materials pricing is regarded by many respondents as only suitable for small projects. Users' reluctance to use time and materials pricing for large projects stems from fears that:

- The final project cost cannot easily be identified and costs tend to exceed expectations
- Vendors will deliver low productivity in these circumstances.

Exhibit VI-3

Pricing Mechanisms Preferred by Users: Small Projects



Sample Of 60 Users *Source: INPUT*

C
Value Based Pricing

1. Value-Based Pricing is of Limited Applicability

Exhibit VI-4 summarises some key user attitudes towards fixed price and value-based pricing mechanisms.

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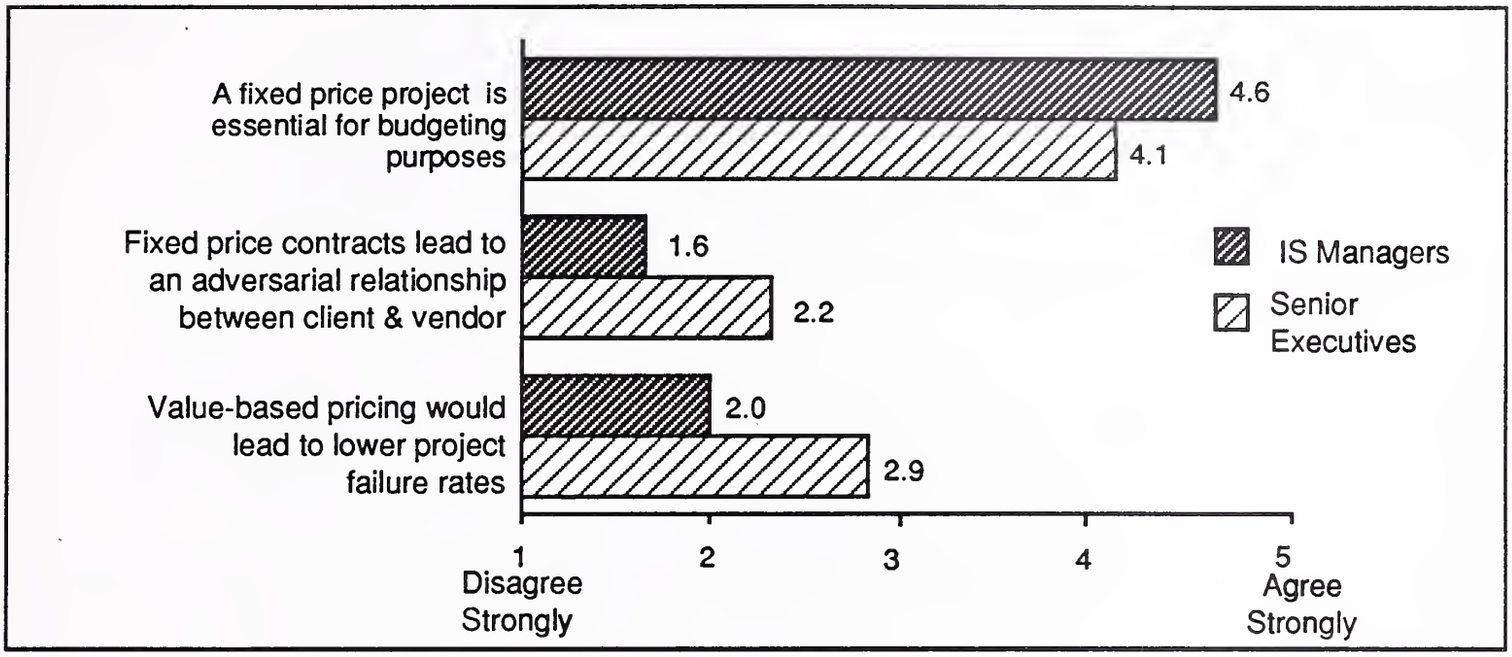
Exhibit VI-4

Users Attitudes to Pricing Mechanisms



Sample of 60 European users. Standard error = 0.15. *Source: INPUT*

Typically, both business unit managers and IS managers remain committed to fixed price since this method is simple, has few perceived disadvantages, and enables clients to determine their future financial commitments accurately. Managers, particularly IS managers, do not perceive fixed price methods to be adversarial in nature. Value-based pricing is thought to be a good idea in theory, but to have a number of practical failings.

Users perceive that value-based pricing is difficult to manage, prone to disputes, and of limited applicability. IS managers perceive that value-based pricing is a high risk approach, that difficulties would arise in attributing benefits between the IT project and other factors, and that lengthy negotiations would be required to obtain senior management approval.

As a result, managers do not perceive value-based pricing as offering a lower risk approach than fixed price methods. Overall, value-based pricing is viewed as being applicable to only a small number of projects where any benefits accrued can be readily demonstrated to arise from improved use of IT. Warehousing projects were suggested as a possible example of this type of project, where both parties can share the benefits of reduced inventory.

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2. Vendor Anticipation of Increased Use of Value-based Pricing

Users currently show a strong preference for fixed price contracts in the project services market. However, many vendors perceive that *fixed pricing* is merely one stage in the evolution of project pricing rather than its ultimate goal. To a certain extent, this may be designed to be a self-fulfilling prophecy, since vendors would like to improve their project services' profit levels. Fixed price contracts have typically had an adverse impact on vendor profitability.

Vendors anticipate that the next stage in the evolution of project pricing will be increased emphasis on value-based pricing. Value-based pricing can be defined as the linking of project price to the achievement of specific business goals within the client organisation. If the project succeeds in achieving these goals then the vendor is rewarded with a share of the savings or of the increased revenues. This approach has potential benefit for both client and vendor, since, at present:

- Projects are inadequately linked to business goals
- Up to one-third of projects fail to satisfy the client's business need
- Value-based pricing focuses management attention on the achievement of the client's business goals.

a. Projects are Inadequately Linked to Business Goals

Exhibit VI-5 shows an analysis of the major sources of project risk from the vendor perspective.

Exhibit VI-6 shows an analysis of the factors identified by vendors to be comparatively low sources of project risk.

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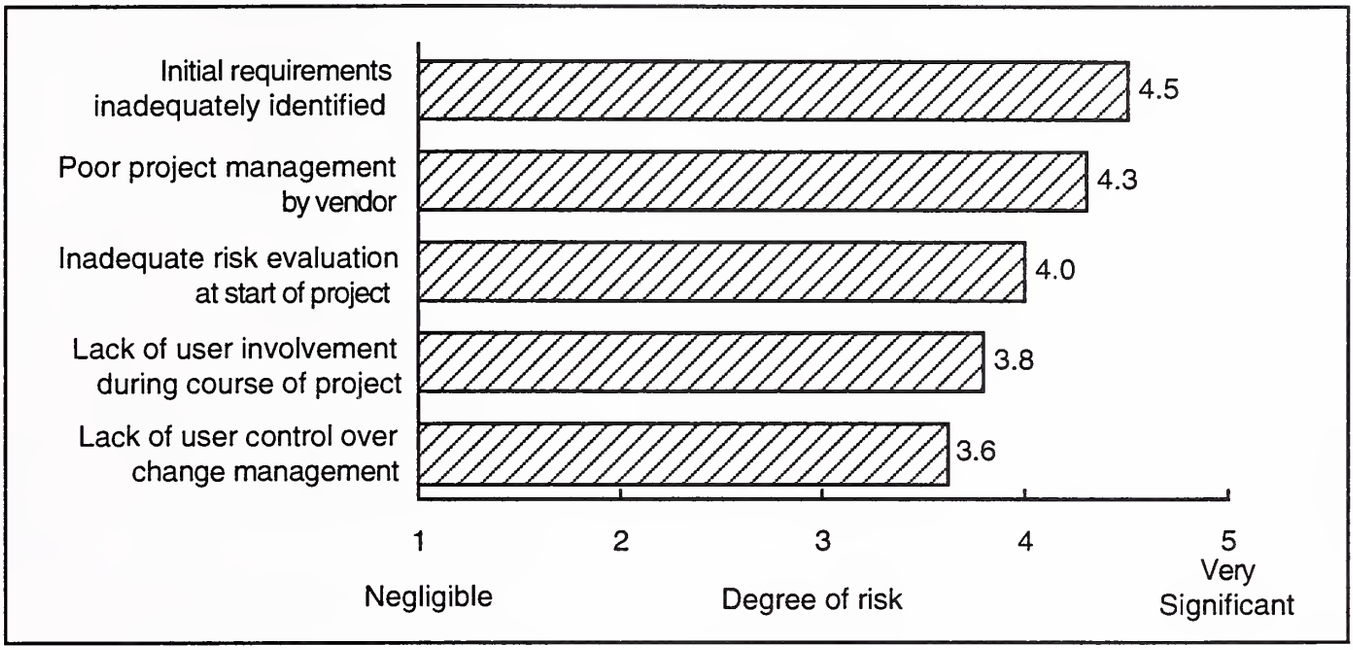
Exhibit VI-5

Sources of Project Risk: High Risk Factors - Vendor Perspective



Sample of 10 leading vendors. Standard error = 0.3. *Source: INPUT*

Essentially, vendors perceive that the major sources of project risk lie in the front-end stages of a project. However, in spite of this, vendors still typically seem to place the responsibility for defining requirements and ensuring user commitment to them firmly in the hands of the client organisation. Only one vendor suggested that this was essential to assist the client in clarifying his requirements and developing a suitable specification.

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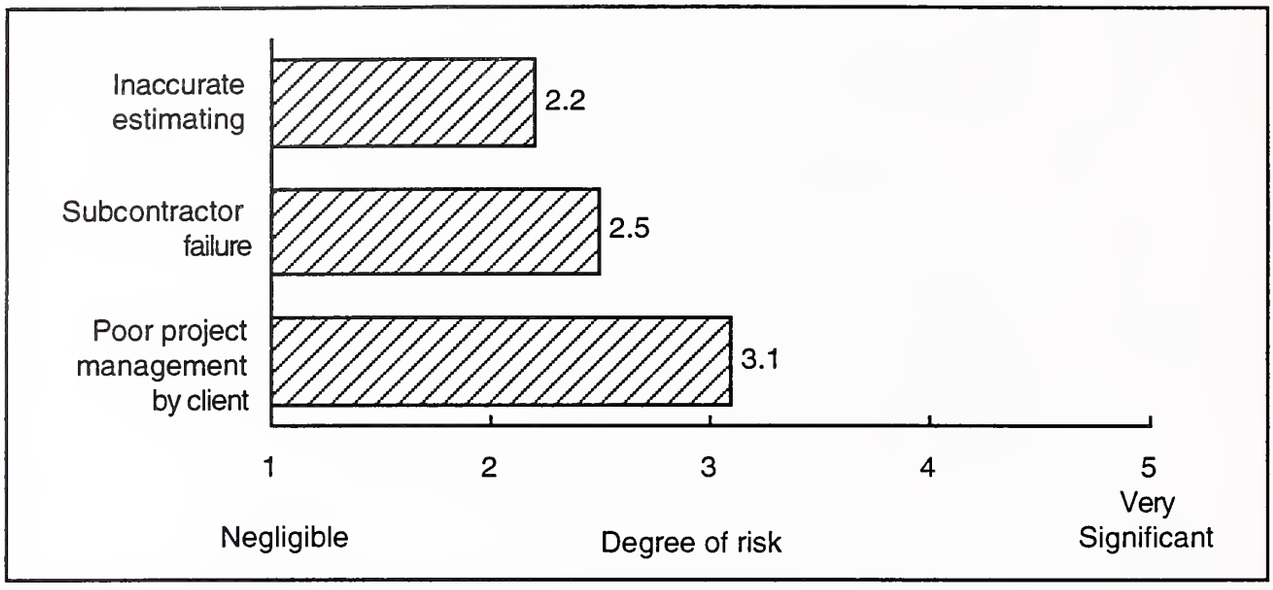
Exhibit VI-6

Sources of Project Risk: Low Risk Factors



Sample of 10 leading vendors. Standard error = 0.3. *Source: INPUT*

The same vendor also suggested that it was a responsibility of the vendor to ensure that the business owner of the project on the client side fully understood the project. In some cases, client sign-off of the initial specification is an administrative procedure, done without any real understanding of the project's scope and likely impact on the client organisation. In addition, few vendors appear to consider that promoting the virtues of the project to users is an important way of increasing commitment and hence reducing project risk.

Few vendors appear to have consistently compiled metrics for estimating project costs. Instead they tend to base their decisions on two independent, but internal estimates from experienced project personnel. Vendors claim confidence in this approach, but the user community has experienced concern over vendor capability in this area and in the related area of managing subcontractors.

b. Up to One-third of Projects Fail to Satisfy Client's Business Need

Exhibit VI-7 shows the average proportion of projects according to vendors that fail because the project:

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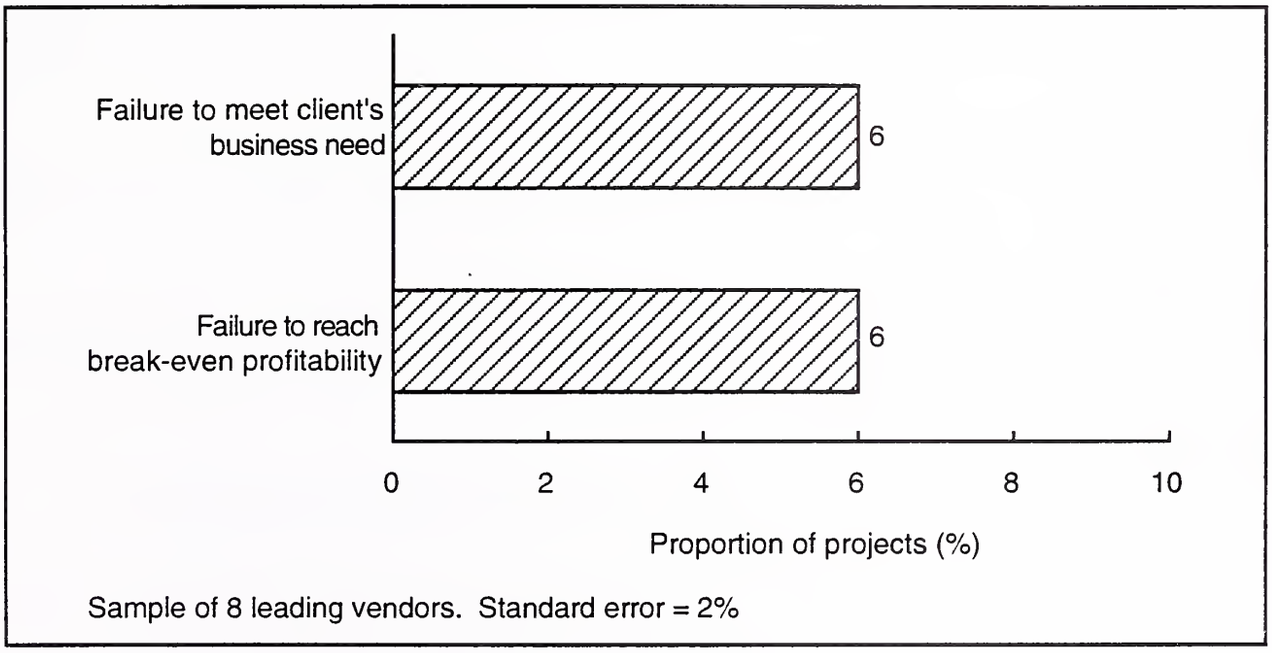
- Does not meet the client's business need
- Does not reach break-even in terms of the vendor's profitability.

A number of vendors interviewed by INPUT were reluctant to admit that projects ever failed to meet the client's business need. The typical argument used by these vendors was that the customer's business need would always be met even if project time scales were significantly exceeded in meeting this objective.

Exhibit VI-7

Project Failure Rates Vendor Perspective



Sample of 8 leading vendors. Standard error = 2%. *Source: INPUT*

Indeed the majority of vendors estimated that the failure rate on this criterion was less than 5%. There is no reason to doubt these estimates if a very narrow view of meeting the business need is taken.

However, some vendors provided indications that client satisfaction may be lower than this. One vendor stated that their customer satisfaction studies showed acceptable satisfaction levels for approximately 80% of projects. Another major vendor estimated that in the strictest sense their projects had failed to meet the client's business need in up to one-third of projects with a significant number of projects being over-engineered. This is a common criticism of major business integration projects.

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Although, project margins are under threat from fixed price projects, the proportion of projects where vendors fail to break even is comparatively low, averaging 6%. Only one major vendor estimated that it might fail to break even in more than 10% of projects. However, the proportion of projects where vendors fail to meet their target profitability will be much higher than this.

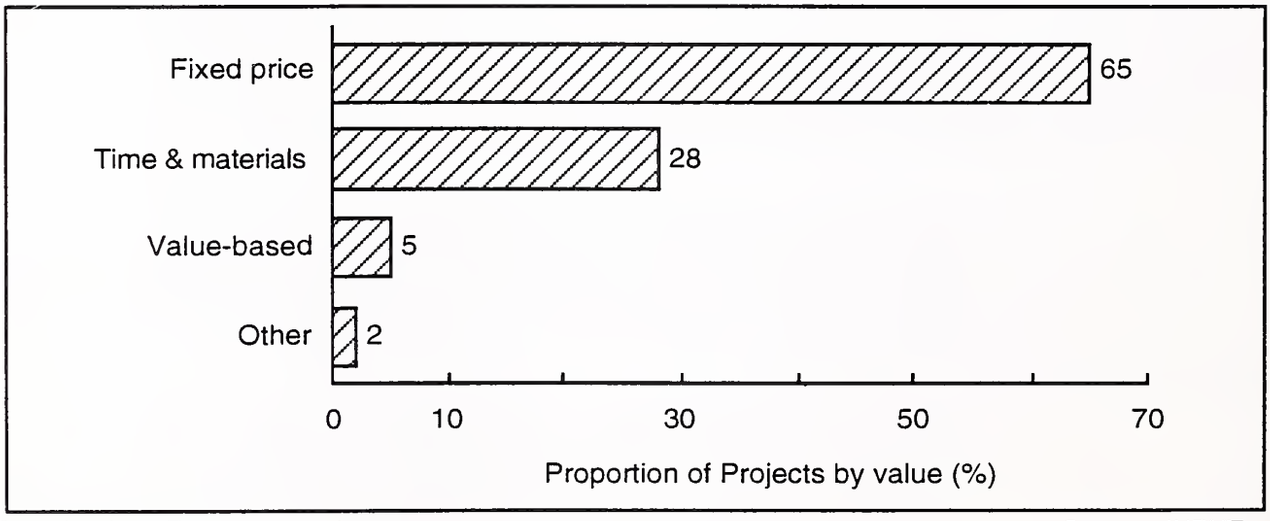
Vendors still typically price projects based on the combination of cost plus and the price at which they feel they can win the business. Ideally vendors aim for margins of approximately 15%, but, in practice, this figure is constrained by competition. Vendors only decline to bid for a very small proportion of projects because of the perceived level of project risk, typically this is around 5%. The threat from competitors is a much more serious impediment to bidding.

c. Value-based Pricing Emphasises the Achievement of Business Goals

Exhibit VI-8 shows the current usage of pricing mechanisms by leading project services vendors.

Exhibit VI-8

Project Pricing Mechanisms 1994 Usage



Sample of 10 European vendors. *Source: INPUT*

Currently, fixed price contracts dominate the project services market. Value-based pricing is only used in a minority of cases. However, vendors expect the use of value-based pricing to increase over the next two years, reaching a position where it is used in 12% of projects by value in 1996. This growth will be largely

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matched by a fall in the proportion of projects conducted on a time and materials basis, which will continue to be superseded by use of fixed price mechanisms. In addition, an increasing proportion of project contracting activity will be carried out within an outsourcing framework as users request vendors to operate the systems they have developed and then contract additional development projects.

Another approach to project pricing has been developed by Andersen Consulting with a concept called *target pricing*. This is essentially a fixed price approach but one that allows the scope of the project to change within the target price. Hence this approach should provide the client with more flexibility than a conventional fixed price contract.

The main issue in business integration projects remains the difficulty of addressing the real business need. The flaw in conventional fixed price contracts is that they assume that the user can specify a precise solution to the business need very early in the project. This is frequently a very unrealistic expectation.

However, the trend towards value-based pricing provides the vendors with an incentive to address business problems rather than just minimise their own commercial exposure while delivering a technical solution. The challenge remains to convince users of the virtues of this approach. Initially, at least, value-based pricing will typically be used in combination with a fixed price element.

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Definition of Terms

A Introduction

INPUT's *Definition of Terms* provides the frame work for all of INPUT's market analyses and forecasts of the information services industry. The structure defined in Exhibit A-1 is used in both Europe and the United States and for INPUT's worldwide forecast study.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to trace market forecast data from year to year against a proven and consistent foundation of definitions.

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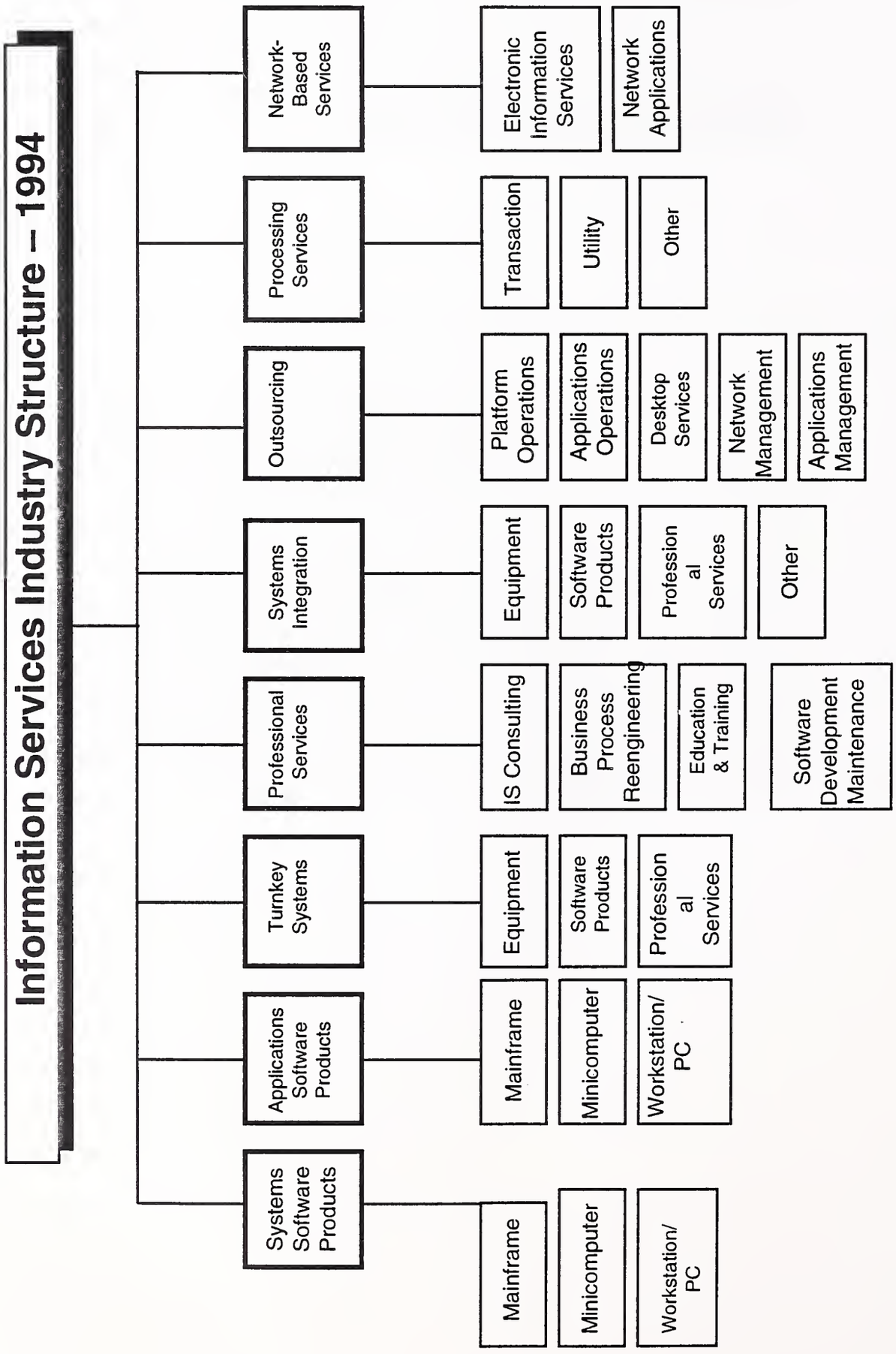
Exhibit A-1

Information Services Industry Structure — 1994



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B
Overall Definitions and Analytical Framework

1. Information Services

Information Services are compute/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)
- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)
- Packaged software products, including systems software or applications software products (called *Software Products*)
- People services that support users in developing and operating their own information systems (called *Professional Services*)
- The combination of products (software and equipment) and services where the vendor assumes total responsibility for the development of a custom integrated solution to an information systems need (called *Systems Integration*)
- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)
- Services that support the delivery of information in electronic form—typically network-oriented services such as value-added networks, electronic mail and document interchange (called *Network Applications*)
- Services that support the access and use of public and proprietary information such as on-line databases and new services (called *Electronic Information Services*)
- Services that support the operation of computer and digital communication equipment (called *Equipment Services*)

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In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is part of an overall service offering such as a turnkey system, a systems operations contract or a systems integration project.

2. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit A-2)

The components of a systems integration project are the following:

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.

- *Software products* - pre-packaged applications and systems software products.

- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance.

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Exhibit A-2

Products/Services in Systems Integration Projects

Equipment

- Information Systems
- Communications

Software Products

- Systems software
- Application software

Professional Services

- Consulting
  - — Feasibility and trade-off studies
  - — Selection of equipment, network and software
- Program/project management
- Design/integration
  - — Systems design
  - — Installation of equipment, network, and software
  - — Demonstration and testing
- Software development
  - — Modification of software packages
  - — Modification of existing software
  - — Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services

- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

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- *Other services* - most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

3. Professional Services

This category includes four submodes: consulting, education and training, software development, and applications management. Exhibit A-3 provides additional detail.

- *Consulting*: Services include management consulting (related to information systems), information systems reengineering, information systems consulting, feasibility analysis and cost effectiveness studies, and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.

- *Education and Training*: Services that provide training and education or the development of training materials related to information systems and services for the information systems professional and the user, including computer-aided instruction, computer-based education, and vendor instruction of user personnel in operations, design, programming and documentation. Education and training provided by school systems is not included. General education and training products are included as a cross-industry market sector.

- *Software Development*: Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

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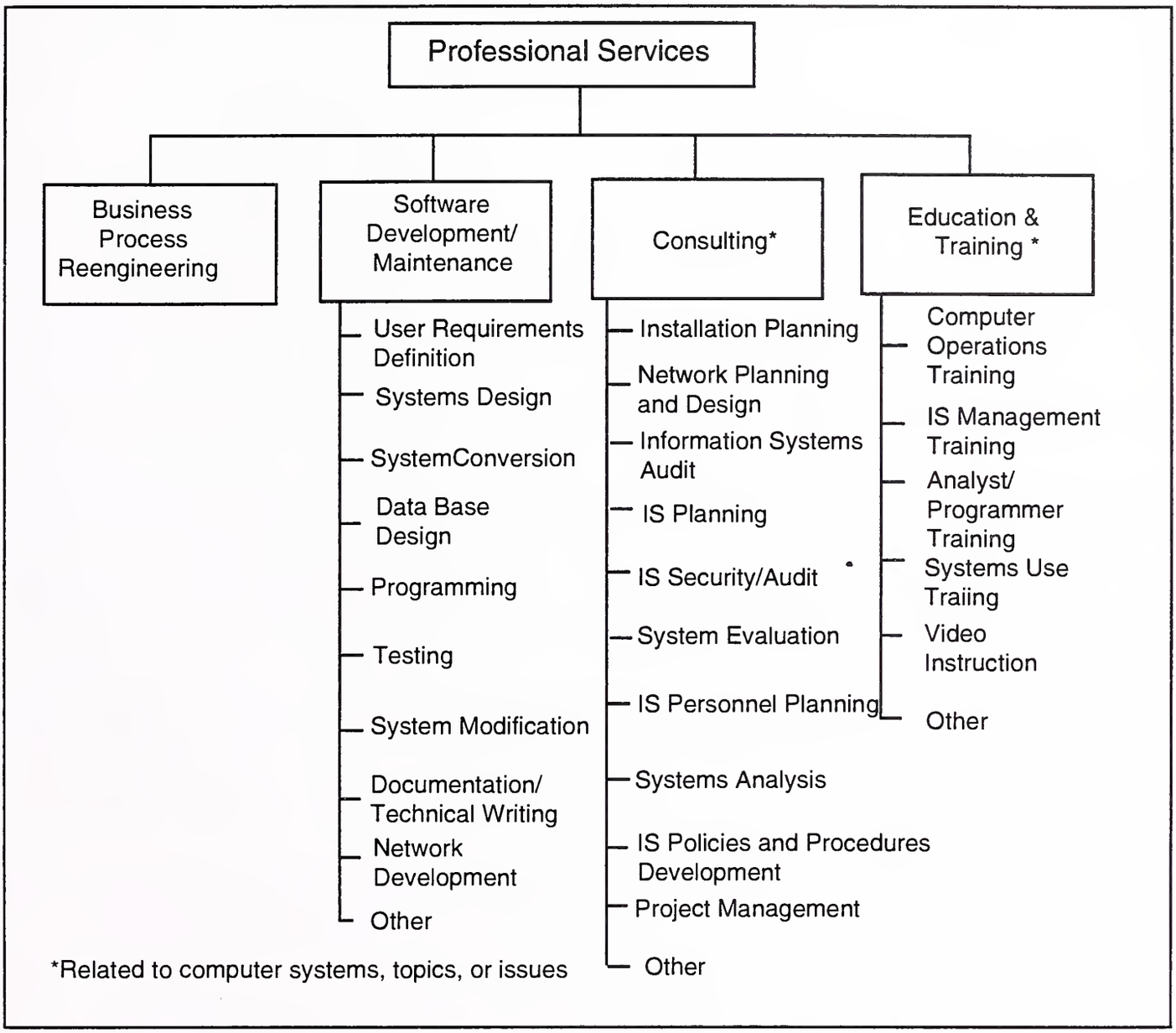
Exhibit A-3

Professional Services Market Structure



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B

User Interview Guide

A. Causes of project failure

1) What do you believe are the major causes of project failure in information systems developed by, or in conjunction with, an external vendor?

_____

_____

_____

_____

_____

2) How significant do you perceive each of the following factors to be as a source of project risk? Please rate on a scale of 1-5 where 1 = negligible and 5 = very significant?

	Factor	Rating
a)	Initial requirements inadequately identified by users	_____
b)	Lack of user involvement during course of project	_____
c)	Poor project management by vendor	_____
d)	Poor project management within your organisation	_____
e)	Inaccurate estimating by vendor	_____
f)	Inadequate risk evaluation by vendor at start of project	_____

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g) Subcontractor failure _____

h) Lack of control over end user change management requests _____

i) Needs changing as project progresses _____

3) What steps should be taken to minimise the probability of failure?

_____

_____

_____

_____

B. Role of Vendor

4) In large information systems projects, how desirable is it for an external vendor:

To take prime responsibility for the complete project _____

To take prime responsibility for selected elements of the project _____

To supply supporting services as required and not take responsibility for project deliverables _____

Please rate on a scale of 1-5, (where 1 = not at all desirable and 5 = extremely desirable).

5) Ideally what responsibilities should be taken by your organisation and which by the vendor to ensure successful information systems projects?

User	Vendor

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6) How desirable is for an external vendor to take responsibility for each of the following:
Please rate on a scale of 1-5 (where 1 = not at all desirable and 5 = extremely desirable)

— business process reengineering _____

— functional specification _____

— detailed system design _____

— system development _____

— system implementation _____

— training of end users _____

— system performance _____

— conformance to business need _____

— cost of system _____

7a) In which areas is the quality of partnership between client and vendor critical to project success?

_____

_____

7b) On a scale of 1-5 (where 1 = extremely poor and 5 = excellent), how would you rate the quality of partnership between your organisation and vendors used in IT projects recently?

_____

8) How desirable is it to improve the quality of partnership between vendor and client? Please rate on a scale of 1-5 (where 1 = not at all desirable and 5 = very desirable).

_____

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9) How do you feel the quality of partnership could be improved?

_____

_____

_____

C. Pricing Mechanisms

10) To what extent do you favour each of the following pricing mechanisms when subcontracting information systems projects?
Please rate of a scale of 1-5 (where 1 = not at all and 5 = very favourable).

Fixed price basis _____

Time and materials basis _____

Value-based pricing _____

Joint-venture/share ownership _____

Other (please specify) _____

11) For what type of project or project element are each of these pricing mechanisms most appropriate?

Fixed price _____

_____

Time and materials _____

_____

Value-based pricing _____

_____

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Joint venture/
shared ownership _____

_____

12) What are the advantages/disadvantages of each of these approaches?

Fixed price _____

_____

Time and materials _____

_____

Value-based pricing _____

_____

Joint venture/
shared ownership _____

_____

13) Which pricing mechanism do you prefer for large projects (>$500k)?

_____

_____

14) Which pricing mechanism do you favour for small projects?

_____

_____

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D. Attitudes

15) To what extent do you believe that:
{Please rate the following in a scale of 1-5 (where 1 = disagree strongly and 5 = strong agreement)}

a) Vendors should take more responsibility for project risk _____

b) Vendor profitability is adequate to cover their risks _____

c) Clients should take an equal share of project risk _____

d) Fixed price projects lead to an adversarial relationship between client and vendor _____

e) Improved partnerships would lead to improved ability to meet the client's business need _____

f) Value based pricing would lead to lower project failure rates _____

g) Client and vendor should share both the risks and the reward of projects _____

h) A fixed project price is essential for budgeting purposes _____

i) Vendor incentives could be based on a value-based price component _____

j) Vendors should not be offered incentives beyond the fixed price agreed _____

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16) Do you favoured use of a preferred supplier for information systems projects?

YES	
NO	

Why?

E. Background Information

17) Size of company (turnover)

18) Industry

19) Position of respondent

Thank you very much

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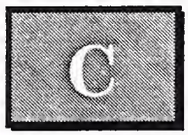

Vendor Interview Guide

1. What factors are most important in determining project success?

_____

_____

_____

2. What factors do you feel make the largest contribution to project failure?

_____

_____

_____

3. How significant do you perceive each of the following factors to be as a source of project risk? Please rate on a score of 1-5 (where 1 = negligible and 5 = very significant).

Factor	Rating
Initial requirements inadequately identified	_____
Lack of user involvement during course of project	_____
Poor project management, by client	_____
Poor project management, by vendor	_____
Inaccurate estimating	_____
Inadequate risk evaluation at start of project	_____

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Subcontractor failure _____

Subcontractor failure _____

Lack of user control over change management _____

4. What proportion of Invitations to Tender that you receive do you decline because of the risks involved (not because of strong competition)?

5. What steps do you take to try and reduce the risk in projects which you perceive to be comparatively high risk?

6. Roughly what proportion of your project-based business is undertaken:

On a fixed price basis? _____
On a time and materials basis? _____
On a value-added approach? _____
On another basis (please specify) _____

7. How do you expect these proportions to change over the next two years?

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8. Approximately what proportion of projects fail in the sense that they do not meet the client's business need?

By number **By value**

9. Approximately what proportion of projects fail in the sense that you do not achieve break-even?

By number **By value**

10. Would you please describe the approaches you use for each of the following, identifying any models or methodologies used? What are the key means of risk reduction for each of these?

(a) For risk evaluation

(b) For estimating

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(c) For overall project management

(d) For sub-contractor management

(e) For project pricing

(f) For identifying the pricing mechanism to be used

Thank You

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